



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

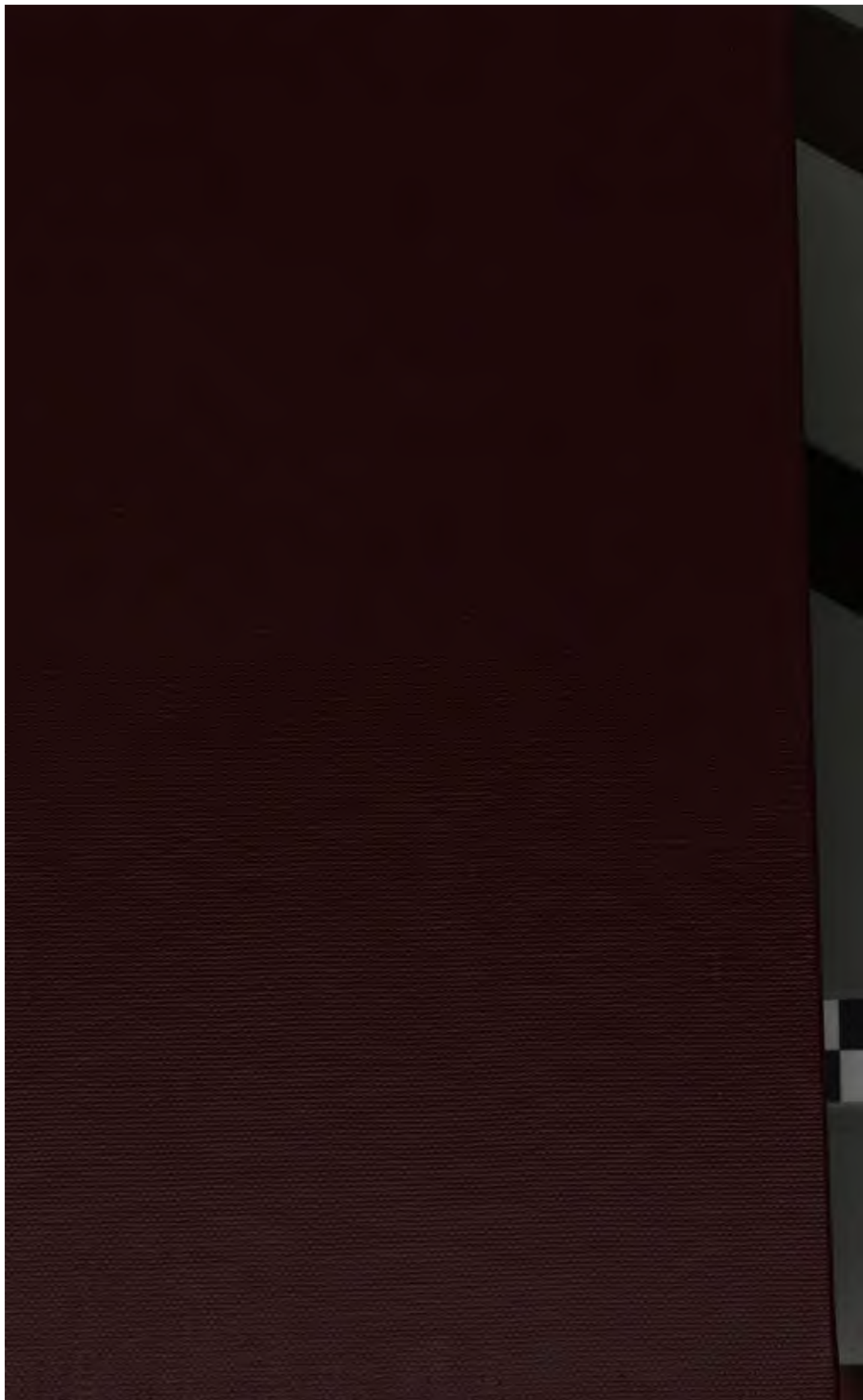
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

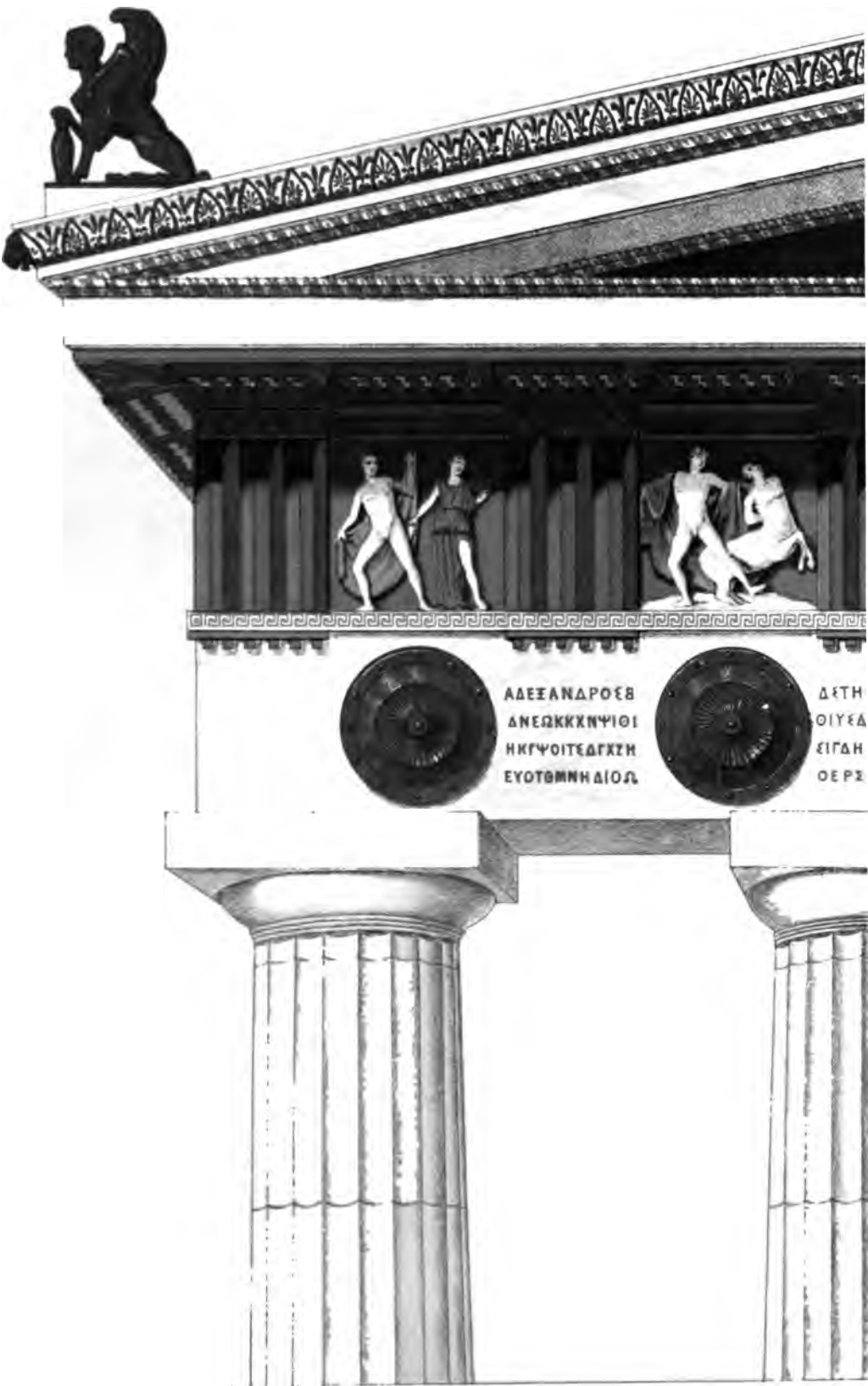
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



CYC 342





GRECIAN DORIC TEMPLE.

lia,

4

and

The
Iconographic Encyclopædia,
OF THE
ARTS AND SCIENCES

Translated from the German of the
BILDER - ATLAS
(Iconographische Encyclopædie)
REVISED AND ENLARGED BY EMINENT AMERICAN SPECIALISTS

beautifully illustrated with nearly 600 Steel, Wood and
Lithographic Prints, from the Original Plates
with upward of 100 plates exclusively pre-
pared for this edition and embracing
more than 12000 separate figures.

PUBLISHED BY SPECIAL ARRANGEMENT WITH THE PROPRIETOR
F. A. BROCKHAUS,
LEIPZIG, GERMANY.

Iconographic Publishing Co.,
Philadelphia.

~~Handwritten text~~
~~Handwritten text~~
Cyc 342



From - [illegible]

THE

ICONOGRAPHIC ENCYCLOPÆDIA

ARCHITECTURE

TRANSLATED FROM THE GERMAN OF
DR. AUGUST OTTOMAR ESSENWEIN
DIRECTOR OF THE GERMANIC NATIONAL MUSEUM AT NUREMBERG

AND

AMPLIFIED BY A CONTINUATION
OF MODERN EUROPEAN ARCHITECTURE AND BY AN ADDITION ON
AMERICAN ARCHITECTURE.

EDITED BY
W. N. LOCKINGTON, ARCHITECT.

ILLUSTRATED WITH 70 PLATES COMPRISING NEARLY 550 FIGURES.

VOL. IV.

PHILADELPHIA
ICONOGRAPHIC PUBLISHING CO.
1888

Copyright, 1888, by the ICONOGRAPHIC PUBLISHING CO.

WESTCOTT & THOMSON,
Electrotypers.

LEVYTYPE COMPANY,
Engravers.

FRANKLIN PRINTING HOUSE,
Printers.

OLDACK & CO.,
Binders.

PHILADELPHIA.

EDITOR'S PREFACE.

THE present volume of the Iconographic series, following in natural order those previously issued, is devoted to the consideration of Architecture as an Art. The translation of Professor Essenwein's German text embraces all that precedes the Development of Modern English Architecture (p. 305), and also includes the Architecture of the American Aborigines (pp. 331-334), while the remaining text is an original contribution prepared expressly by the Editor for this volume.

In the rendering there has been a strict adherence to the plan of the author, though in some instances, aside from the annotations by the editor, the text has been thoroughly revised and duly augmented. To avoid the possibility of error, the author's descriptions of the multifarious structures mentioned have been carefully compared with those of other accepted authorities.

It is believed that both the logical and the chronological arrangement of subjects will be appreciated by those who desire an accurate knowledge of the development of Architecture, and of the relations which the Art of one age sustains to that of another. Of special interest are the frequent and often elaborate dissertations illustrative of the political, intellectual, and religious status of different peoples at different times, and showing the influence that has been exerted on successive architectural forms by varying conditions.

The illustrations which accompany the translated text comprise fifty-three double-page steel plates, embracing more than five hundred distinct subjects. The beauty and accuracy of these engravings, even to the minutest detail, have rarely, if ever, been surpassed.

Throughout all the older ages the temple, pagan or Christian, was the chief building, and by far the greater part of the monuments that have come down to us from former times are of this class. In the present age the temple has lost its pre-eminence: the dwelling and the commercial building are far more prominent than the church. Arrangements for the comfort of individuals such as in former ages were worked out by each

family for its own purposes now receive the attention of thousands of thinkers, who, as architects, draughtsmen, contractors, manufacturers of scientific and artistic appliances, etc., exercise a certain amount of influence upon the arrangement and appearance of the new buildings which arise on every side.

As the scope of the original work did not include an extended account of Modern European Architecture, that subject has been amplified by a consideration of its more salient recent phases. The author has furthermore taken into due consideration the subject of the development of Architecture in America, ecclesiastical, public, commercial, and domestic, and has selected from an extended list of noteworthy structures a series of characteristic examples, the description of which he has endeavored to supplement with critical remarks. The thirty-seven illustrations which have been prepared to accompany the original contribution to this volume have necessarily been confined to such representative structures as epitomize the special characteristics of each class.

In the spelling of Greek proper names the method employed in the preceding volume has for reasons there given been adopted in this also, for which departure from long-established custom there needs no apology.

W. N. LOCKINGTON.

GERMANTOWN, May, 1888.

BIOGRAPHICAL SKETCH.

WITH special reference to the portion of this volume which is a translation from the German, there is here appended a brief sketch of the scientific career of Dr. Essenwein by way of introducing his work to the English-speaking public:

AUGUST OTTOMAR ESSENWEIN, the Chief Director of the Germanic National Museum at Nuremberg, has an established reputation both as an architect and as a writer on art. He was born at Carlsruhe on the 2d of November, 1831, and received his early education in that city, passing through the Gymnasium and entering on the study of Architecture in the Polytechnic School. After reaching manhood he visited Berlin, Vienna, and Paris, availing himself freely of the treasures of their museums and coming into close contact with the most famous artists. Meanwhile, his pen was not idle, and, besides many contributions to art-journals, he published an essay on *Brick Building in North Germany in the Middle Ages* (Carlsruhe, 1855), which drew attention to a previously-neglected subject. Settling then at Vienna, he soon entered the government railway service. But Art, and especially Architecture, was his true vocation, and all his time which could be spared was diligently devoted either to the writing of essays on art-history or to plans for restorations and new buildings. His activity soon extended to industrial art, and he furnished hundreds of designs to tradesmen of all kinds. In 1864 his diligence was rewarded with an appointment as building-surveyor for the city of Gratz. Here he was also made professor of Architecture in the Technological Academy on its reorganization, in 1865; but in the next year he was called to the important post to which he has since devoted all his energies—the superintendence of the Germanic National Museum, at Nuremberg. This institution, founded by Baron Aufsess in 1853 for collections of German art and antiquities, and for researches in natural history and literature, has attained conspicuous excellence. It occupies an old Carthusian monastery, which has been adapted and beautified by Essenwein himself. Its picture-gallery contains masterpieces by Holbein, Dürer, and other famous artists of South Germany. In the varied work connected with this noted museum the genius of Essenwein—many-sided, yet practical—has found a suitable field for its exercise. To the monthly periodical issued by the Museum he has contributed many valuable articles explaining and discussing the treasures of which he is custodian. He has also published his finely-illustrated work, *The Monuments of Mediæval Art in the City of Cracow* (Nuremberg, 1867), and *The Interior Decoration of the Church of St. Martin the Great in Cologne* (Cologne, 1868). For the second edition of the *Bilder-Atlas* (1875) he edited the treatise on ARCHITECTURE, which is the basis of the present volume. His professional labors in that department have been chiefly on ecclesiasti-

cal buildings, in which he has sought to present the results of his historical investigations. His work heretofore has not been confined to Architecture in a strict sense, but has embraced all the arts and industries that in the Middle Ages contributed to the enrichment of the most splendid churches of Europe. Numerous places throughout Germany and Austria exhibit his designs in churches, altars, windows, and ornaments. Among the most renowned are the restoration of the Church of Our Lady in Nuremberg, the painting of the cathedral at Brunswick, and the interior decoration of the Church of St. Mary in Cologne.

CONTENTS.

INTRODUCTORY	PAGE 19
Definition, 19.—Analysis of Architectural Forms, 20.—Architectural Form an Expression of the Age, 20.—Ideality Expressed in Design, 20.—Art-principles, 21.—Standards of Form, 21.—Development and Decay of Styles, 22.	

THE THEORY OF ARCHITECTURAL FORMS	23
1. <i>Parallelism between Nature and Art</i> : Fundamental Principle of Art, 23.—Characteristics in Art, 24.—The Beautiful in Art, 24.	
2. <i>Laws of Constructive Art</i> : Order, 25.—Symmetry, 26.—Geometrical Construction, 27.	
3. <i>Materials of Construction</i> , 27.	
4. <i>Construction</i> , 28.	
5. <i>Structural Details</i> : Language of Forms, 30.—Laws of Proportion, 31.—Analogies of Form, 31.—Ornamentation, 31.—Decorative Forms, 32.—Color in Architecture, 32.—Conclusion, 33.	

PART I. ANCIENT ARCHITECTURE.

I. THE EGYPTIANS	35
----------------------------	----

The Priesthood, 36.—The Pyramids, 36.—The Sphinx, 37.—Egyptian Dynasties, 37.—The Hyksos, 37.—Monuments of Thebes, 37.—Egyptian Temples, 38.—Culmination of Egyptian Culture, 38.—Great Temple at Karnak, 38.—Rock-temples of Nubia, 39.—Decadence of Egyptian Art, 39.—Egypt under Persian Rule, 40.—Egypt under Greek and Roman Rule, 40.—Character of Egyptian Architecture, 41.—Conclusion, 41.

II. THE ASIATIC RACES	43
---------------------------------	----

The Aborigines, 42.—Mongolians and Assyrians, 43.—Phoenicians, 43.—Primitive Type of Asiatic Architecture, 43.—Technical Skill, 43.—Monumental Remains, 44. *Assyrian Architecture*: Nineveh, 44.—Royal Palaces, 44.—Palaces at Nimrud, 45.—Palace-construction, 45.—Cupolas and Arches, 45.—Materials, 46. *Babylonian Art*: Temple of Bel, 46.—Babylonian Remains, 47.—Walls and Palaces, 47.—Architectonic Features, 47.—Fall of Babylon, 48.—Palace of Ecbatana, 48. *Persian Architecture*: Palace and Tomb of Cyrus, 48.—Rock-tombs of Persepolis, 48.—Tomb of Darius, 48.—Royal Palaces at Persepolis, 49.—Construction, 49.—Origin of Architectural Forms, 49.—Portals, 50.—Walls, 50.—Conclusion, 50.

III. THE PELASGIAN RACES.	51
-----------------------------------	----

Pelasgian Works: City Walls of Tiryns and Mykenæ, 52.—Gateways, 52.—Gate of the Lions, 52.—Other City Gates and Walls, 53.—Pelasgian Temples, 53.—Sepulchres, 54.

—Lydian Tombs, 54.—Rock-tomb of Midas, 55.—Treasury of Atreus, 55.—Royal Palaces, 55.—Lykian Rock-tombs, 57. *Etruscan Architecture*: Walls and Gates, 57.—Etruscan Tombs, 58.—Period of Etruscan Art-culture, 58.—Inception of Roman Art, 59.—Etruscan and Roman Temples, 59.—Public Works, 60.—Conclusion, 60.

IV. CLASSICAL ARCHITECTURE 61

1. *Greek Architecture: Period of Hellenic Independence*.—Transition from Pelasgic to Hellenic Art, 61.—Dorians and Ionians, 61.—The Greek Temple, 61.—Timber-construction, 62.—Stone-construction, 63.—Doric Temples, 63.—Characteristics of Temple-construction, 63.—Doric Order, 64.—Ionic Order, 65. *Works of the Sixth Century B. C.*: Temple of Artemis, 66.—Temples of Apollo and Zeus, 66.—Older Parthenon, 67.—Temple of Athena, 67. *Works of the Fifth Century B. C.*: Temple of Olympian Zeus, 67.—Temple of Poseidon, 68.—Architecture of Athens, 68.—New Parthenon, 68.—The Propylæa, 69.—The Erechtheion, 69.—Other Temples, 69. *Works of the Fourth Century B. C.*: Temple of Apollo, 70.—Temple of Athena, 71.—Mausoleum of Halikarnassos, 71.—Temple of Artemis, 71.—Choragic Monuments, 71.—Transition of Grecian Art, 72.—Corinthian Order, 72.—Alexandria, 73.—Temples and Public Buildings, 73.—Vaulted Construction, 73.—Hephæstion's Tomb, 74.—Theatres, 74.—Stadia, 74.—Tower of the Winds, 75.
2. *Roman Architecture*: Early Period of Roman Art, 75.—Temple of Zeus at Athens, 76.—Temple of Jupiter Stator, 77.—Aqueducts, Bridges, and Arches, 77.—Temple of Hercules, 77.—Roman Tombs, 77.—Temple of Jupiter Capitolinus, 78.—Characteristics of Later Roman Art, 78.—Tuscan Order, 78.—Tabularium, 79.—Theatres, 79.—Temple of Venus Genitrix, 80.—Julian Course, 80.—Circus Maximus, 80.—Bridges, 80.—Spread of Grecian Art, 80.—Augustan Era, 81.—Temple of Fortuna Virilis, 81.—Other Temples of this Period, 81.—Circular Temple-structures, 81.—Pantheon, 81.—Architectural Activity of this Period, 82.—Basilicas, 82.—Basilica at Fano, 82.—Arches, 83.—Theatre Marcellus, 83.—Tomb of Augustus, 83.—Architecture under Later Emperors, 83.—Roman Cities, 83.—Dwelling-houses, 83.—Works of Vespasian, 84.—Coliseum, 84.—Works of Titus, 84.—Trajan's Works, 85.—Forum and Basilica Ulpia, 85.—Arches and Columns, 85.—Other Works of Trajan, 86.—Hadrian's Works, 86.—Influence of Egyptian on Roman Art, 86.—Temple of Venus and Roma, 87.—Other Works of Hadrian, 87.—Mausoleum of Hadrian, 88.—Works of Antoninus Pius, 88.—Works of Marcus Aurelius, 88. *Works of the Third Century A. D.*: Arch of Severus, 89.—Baths of Caracalla, 89.—Other Works of the Third Century, 89.—Period of the Decline, 90.—Temple of the Sun at Rome, 90.—Temple of the Sun at Palmyra, 90.—Ruins of Baalbec, 90.—The Great Temple, 90.—Temple of the Sun, 91.—Temple of Virtus et Honos, 91.—Works of Diocletian, 91.—Baths of Diocletian, 91.—Pompey's Pillar, 91.—Palace of Diocletian, 91.—Circus of Maxentius, 92.—Basilica of Peace, 92.—Works of Constantine's Time, 92.
3. *Application of Color to Architecture*: Egyptian, 93.—Assyrian and Babylonian, 93.—Phœnician, 93.—Grecian, 94.—Roman, 94.

PART II. EARLY CHRISTIAN, MEDIÆVAL, AND RENAISSANCE ARCHITECTURE.

I. EARLY CHRISTIAN ARCHITECTURE 97

Early Christian Churches, 97.—Basilicas, 97.—The Sessoriana, 97.—Basilica of St. Peter, 98.—Basilica of St. John Lateran, 98.—Other Basilicas, 98.—Domical Churches, 98.—Church of Sta. Sophia, 98.—Churches of North Africa, 99.—Architecture of Central Syria, 99.—Vaulted Construction, 99.—Syrian Tombs, 99.—Syrian Cities, 100.—Construction, 100. *Christian Churches of the Fourth Century*: Tomb of St. Helena, 100.—Tomb of Sta. Costanza, 101.—Sta. Maria Maggiore, 101.—S. Paolo fuori le Mura, 101.—S. Maria Rotondo at Nocera de Pagani, 101.—S. Lorenzo at Milan, 101.—Fall of Rome,

CONTENTS.

II

PAGE

101. *Churches of the Fifth Century*: Circular Churches, 102.—S. Stefano Rotondo at Rome, 103.—Syrian Churches, 103.—St. Simeon Stylites, 103. *Structures of the Sixth Century*: Works of Theodoric, 103.—Palace of Theodoric, 103.—Tomb of Theodoric, 104.—Church S. Vitale, 104.—Works of Justinian, 104.—Church Sta. Sophia, 104.—Ornamentation, 106.

II. OFFSHOOTS OF CLASSIC ART 106

1. *Sásanian Style*: Historical, 106.—Khosrau II., 107.—Architectural Remains, 107.—Characteristics of Sásanian Architecture, 107.
2. *Architectural Art of the Franks and Other Germanic Races*: Buildings of the Fifth and Sixth Centuries, 108.—Buildings of the Seventh and Eighth Centuries, 108.—Convent of Fontanellum, 109.—Decadence of Architectural Art, 109.—Architectural Revival under Charlemagne, 109.—Works of Charlemagne, 109.—Buildings of the Ninth Century, 110.—Eginhard's Works, 110.
3. *Byzantine Style*: Domical Churches, 111.—Church of Sta. Sophia, 111.—Sta. Irene and Other Churches, 112.—Royal Palaces, 112.—Works of Basil, 112.—Agia Theotokos, 113.—Byzantine Art in Venice, 113.—St. Mark's, 113.—Church of St. Front, 113.—Influence of Byzantine Art in Sicily, 114.—Byzantine Art in the Eastern Empire, 114.

III. ARCHITECTURE OF LATER RACES. 115

1. *Indian Architecture*: Ancient Remains, 115.—Literature and Chronology, 115.—Brahmanical Cult, 116.—Cult of Buddha, 116.—Buddhistic Art, 116.—Triumphal Columns, 116.—Dhagobas or Topes, 116.—Açoka's Works, 116.—Tope of Sanchi, 117.—Other Groups of Topes, 117.—Conventual Structures, 117.—Chaitya and Vihara Grottos, 117.—Grotto of Karli, 118.—Ajuntah Chaityas, 118.—Ajuntah Viharas, 118.—Ellora Caves, 119.—Temple of Viswakarma, 119.—Brahmanical Art, 119.—Grotto-temples, 119.—The Kailasa, 119.—Chalembaram Pagoda, 120.—Jain Art, 120.—Temple at Sadree, 120.—Islamitic Influence, 121.—Burmese Pagodas, 121.—Boro-Budor Temple, 121.—Later Hindu Art, 121.—Choultry at Madura, 121.
2. *Chinese Architecture*: Influence of Buddhistic Art, 122.—Chinese Architecture, 122.—Temples or Pagodas, 122.—Secular Buildings, 123.
3. *Saracenic Architecture—Seventh to Tenth Century*: The Kaaba, 124.—Christian Churches Occupied by Mohammedans, 125.—Mohammedan Art in Syria: Palestine, 125.—Mosque of Omar, 125.—Mosque el-Aksa, 125.—Mosque of Amru, 125.—Church of St. John the Baptist at Damascus, 126.—Development of Architectural Forms, 126.—Stilting of the Arches, 126.—Pointed and Horseshoe Arches, 126.—Mohammedan Art in Turkey: Palaces, 127.—In Spain: Mosque at Cordova, 127.—In Africa: Mosque of Ibn Touloun, 128.—Conquest of Sicily, 128.—City and Palace of Az Zahra, 129. *Mohammedan Art from the Eleventh to the Fifteenth Century*, 129.—In Egypt: Mosques, 130.—Mosque of Saladin, 130.—Mosque of Sultan Hassan, 130.—Mosque el-Moyed, 131.—Kait-Bey Mosque, 131.—In Sicily: Under Norman Rule, 131.—Influence of Saracenic Art in Sicily, 131.—Palaces, 131.—Palace Zisa, 131.—Palace Kuba, 132.—Palatine Chapel, 132.—In Persia, 132.—Asia Minor and Syria: Mosques, 133.—Green Mosque at Nicæa, 133.—Great Mosque at Broussa, 133.—In Spain: Mosque of Seville, 134.—The Giralda, 134.—The Alcazar, 134.—The Alhambra, 135.—Court of the Blessing, 135.—Court of the Lions, 135.—Hall of the Abencerrages, 136.—The Generalife, 136.—Characteristics of Moorish Architecture, 136.—Moorish Art in Africa, 137.—Mohammedan Art in India: The Kutab-Minâr, 137.—Persian-Mohammedan Art: The Mydân-i-Shah, 138.—The Chihil-Sutûn, 139.—The Medresseh, 139.—Caravansaries, 139.—Indian-Mohammedan Architecture: Jâmmâ-Masjid, 140.—Mott-Masjid, 140.—The Tâj-Mahal, 140.—In European Turkey: Mosques, 142.—Fountain of Sultan Achmet, 142.—Mural Decoration, 142.
4. *Russian Architecture*: Russian Civilization, 143.—Architecture of the Eleventh Century, 143.—Twelfth Century, 144.—Thirteenth Century, 144.—Conquest of the Mongols, 144.

—Architecture of the Fifteenth Century, 144.—Church of the Assumption, 144.—Architecture of the Sixteenth Century, 145.—Cathedral Vassili Blashennoi, 145.—Architecture of the Seventeenth Century, 145.

PAGE

IV. ROMANESQUE ARCHITECTURE 146

- A. *German Romanesque of the Tenth Century*: Works of Otho the Great in Saxony, 148.—Architecture on the Rhine, 149.—Architecture of Southern Germany, 150.
- B. *German Romanesque of the Eleventh Century*: Development of Architecture at this Period, 151.—New Elements of Construction, 151.—Architecture of North-west Germany, 152.—Church of St. Michael, 152.—Architecture on the Rhine, 154.—Cathedral of Mayence, 155.—Hirschau Convent, 157.—Further Development of Architecture, 157.—Vaulting, 157.—In Southern Germany, 158.—In Austria, 159.—In Bohemia, Poland, and Hungary, 159.
- C. *German Romanesque of the Twelfth Century*: Rhenish Provinces, 159.—Convent-church at Laach, 160.—In Southern Germany, 161.—In Saxony, 162.—In North-east Germany, 162.
- D. *Italian Romanesque, Tenth to Twelfth Century*: Upper and Middle Italy, 164.—Campanili, 166.
- E. *French Romanesque, Tenth to Twelfth Century*: Abbey of Cluny, 167.—Church of Cluny, 168.—Church of Notre Dame du Port, 168.—In Normandy, 169.
- F. *English Romanesque*: Characteristics of English Romanesque, 170.
- G. *Spanish Romanesque*: Vaulting, 170.—Shrine of S. Jago, 171.—First Appearance of the Gothic in Spain, 171.—The Crusades, 172.—Influence of the Church on Architectural Development, 173.
- H. *French Architecture from the Close of the Twelfth Century: Transition to the Gothic*: Constructional Development, 173.—Groined Vaulting, 174.—Transition to Gothic, 174.—Pointed Arch, 174.—Pointed Vaulting, 174.—Diagonal Ribs, 175.—Church of St. Germain des Prés, 176.—Church of Notre Dame at Châlons, 176.—Noyon Cathedral, 177.—Church of Notre Dame at Paris, 177.—Laon Cathedral, 178.—Soissons Cathedral, 179.—Noyon Cathedral, 179.—Cathedral of Langres, 179.—Notre Dame at Dijon, 180.—Notre Dame at Paris, 180.—Church at Vezelay, 181. *German Transition to the Gothic*, 181.—Cathedral of Bamberg, 183.—Cathedral of Magdeburg, 183.—Cloisters, 183.—Convent of Maulbronn, 184.—Dwelling-houses, 184.—Ornamentation, 184.—Column-base and Cornice, 185.—Development of Forms, 185.

V. GOTHIC ARCHITECTURE 186

1. *French Gothic, Thirteenth and Fourteenth Centuries*: Development of the Gothic, 187.—Effect of the Innovation, 187.—St. Étienne at Auxerre, 188.—Church at Rieux, 188.—Cathedral of Notre Dame at Coutances, 189.—Notre Dame at Le Mans, 189.—Cathedral at Bourges, 189.—Cathedral of Rouen, 189.—Cathedral of Rheims, 190.—Cathedral of Amiens, 190.—Architectural Activity, 191.—Convents, 191.—Private and Public Works, 191.—Sainte Chapelle at Paris, 191.—Cathedral of Tours, 192.—Conventual Buildings, 192.—Church of St. Denis, 192.—Cathedral of Beauvais, 192.—Improvement in Forms, 193.—Cathedral of Bayeux, 193.—Friars' Churches, 193.—Church of the Jacobins, 194.—Structural Modifications, 194.—Cathedral at Paris, 194.—Cathedral at Séz, 194.—Cathedral at Alby, 195.—Cathedral at Carcassonne, 196.—St. Ouen at Rouen, 197.—Palaces: The Louvre, 197.—Hôtel St. Paul, 197.—Papal Palace at Avignon, 197.—Château of Pierrefonds, 198.
2. *English Gothic, Thirteenth to Sixteenth Century*: Early English Gothic, 198.—Canterbury Cathedral, 198.—Temple Church at London, 199.—Worcester Cathedral, 199.—Salisbury Cathedral, 199.—Minster at Beverly, 200.—Lancet Arches, 200.—Lincoln Cathedral, 201.—Lichfield Cathedral, 201.—Westminster Abbey, 202.—Exeter and York Cathedrals, 203.—Melrose Abbey, 203.—Timber-construction, 203.—Characteristics of English Gothic, 203.—Perpendicular, 204.—Fan-vaulting, 204.—Castles, 205.

3. *German Gothic, Thirteenth to Sixteenth Century*: Church of Our Lady at Treves, 205.—Temple of the Holy Grail, 206.—Chapel at Treves, 206.—Cistercian Church at Marienstadt, 206.—Premonstratensian Church of All Saints, 206.—Church of St. Elizabeth at Marburg, 207.—Spread of Gothic in Germany, 207.—Dominican Church at Esslingen, 207.—Cathedral at Metz, 209.—Minster of Freiberg, 209.—Cathedral of Cologne, 209.—Magdeburg Cathedral, 210.—Church of Schulpforte, 211.—Cathedral of Meissen, 211.—Old Church at Ratisbon, 212.—New Church at Ratisbon, 212.—Later German Gothic, 213.—Development of Form-system, 214.—German Idealism, 214.—Fancifulness of Forms, 215.—Façade of Strasburg Cathedral, 216.—St. Stephen's at Vienna, 216.—Cathedral of Prague, 217.—St. Lawrence at Nuremberg, 218.—Church of St. Lambert at Münster, 219.—Minster at Ulm, 219.—Antwerp Cathedral, 219.—Brick-construction, 220.—Brick Churches, 221.—Secular Structures of the Thirteenth Century, 222.—Defensive Works, 222.—Town-halls, 223.—Dwellings, 223.—Secular Structures of the Fourteenth Century, 224.—Secular Structures of the Fifteenth Century, 225.
4. *French Gothic, Fifteenth Century*: Church-architecture, 226.—Secular Architecture, 226.—Château of Poitiers, 226.
5. *Spanish Gothic*: Barcelona Cathedral, 228.—Secular Buildings, 229.
6. *Italian Gothic*: Course of Development, 229.—Church-architecture, 230.—Transitional Style, 230.—San Antonio of Padua, 231.—Siena Cathedral, 231.—Florence Cathedral, 232.—Duomo at Milan, 232.—S. Petronio at Bologna, 233.—Certosa di Pavia, 233.—Como Cathedral, 233.—Gothic in Sicily, 234.—Decorative Works of Art, 234.—Secular Buildings, 234.—Palaces and Castles, 234.—Public Buildings, 235.—Venetian Palaces, 235.—Palazzo Ducale, 235.—Fountains, 235.

VI. RENAISSANCE ARCHITECTURE 236

1. *Italian Renaissance*: Inception of the New Style, 237.—Works of Brunelleschi, 237.—Florence Cathedral, 237.—The Dome, 238.—Abbey of Fiesole, 238.—Palazzo Pitti, 239.—Palazzo Quaratesi, 239.—Brunelleschi School of Architecture, 239.—Works of Alberti, 239.—Influence of the Florentine School, 240.—Sistine Chapel, 240.—Certosa di Pavia, 240.—Sta. Maria in Vado, 240.—Bramante, 241.—Ideal in Church-architecture, 242.—Palaces, 242.—Churches, 243.—Structures of the Sixteenth Century, 243.—Peruzzi, 244.—Sanmicheli, 244.—Raphael, 244.—Sangallo, 245.—Romano, 245.—Sansovino, 246.—Baccio d'Agnolo, 246.—Antonio di Sangallo, 246.—Michelangelo, 246.—Vignola, 247.—Alessi, 247.—Ammanati, 247.—Church of Il Gesù, 248.—Andrea Palladio, 248.
2. *Spanish Renaissance*, 250.
3. *French Renaissance*: Churches, 252.—Structures of the Sixteenth Century, 252.—Château Bury, 252.—Château Blois, 252.—Tomb of Louis XII., 253.—Château Chambord, 253.—Château Madrid, 254.—Church of St. Eustache, 254.—Hôtel de Ville, 254.—Hôtel Ecoville, 254.—Louvre and Tuileries, 255.
4. *German Renaissance*: Restricted Acceptance of the Renaissance, 257.—Earliest Renaissance Forms, 258.—Sculpture, 258.—Painting, 258.—Spread of the Renaissance, 260.—Villa Belvedere, 261.—Tucher Villa, 261.—The Reformation, 262.—Effect of the Reformation, 263.—Palace-construction, 263.—Otto Heinrichsbau, 264.—Decadence of German Renaissance, 265.—The Lusthaus, 266.—Works of the Seventeenth Century, 267.—Friedrichsbau, 267.—Arsenal at Dantzic, 267.—The Pellerhaus, 268.—Church of St. Mary, 268.—Town-hall of Bremen, 268.—Castle of Aschaffenburg, 268.—House of Leibnitz, 268.
5. *English and Scandinavian Renaissance*: Longleat House, 269.—Wollaton House, 269.—Castle Nykiöbbing, 269.—Castle Rosenborg, 269.—Castle Frederiksborg, 269.—Copenhagen Exchange, 270.—Castle of Kronborg, 270.—Heriot Hospital, 270. *Late Renaissance*: Baroque Style, 270.—Classic Revival, 271.—Waldstein Palace, 272.—Inigo Jones, 272.—François Mansard, 273.—Guarini of Modena, 273.—Bernini, 273.—Borromini, 274.—Jules Hardouin, Mansard, 274.—The Louvre, 275.—Christopher Wren,

- 275.—St. Paul's London, 275.—Carlo Fontana, 275.—Fischer of Erlach, 276.—Lucas von Hildebrand, 277.—Colin Campbell, 277.—The Zwinger, 277.—Galilei, 278.—Fuga, 278.—Vanvitelli, 279.—City of Nancy, 279.—Rococo, 279.—Queen Style, 280.—Dwelling-houses, 281.—Theatres, 282.—Berlin University, 283.
6. *Mural Decoration*: Romanesque, 284.—Gothic, 284.

PART III. MODERN ARCHITECTURE.

1. *European Architecture*: Church of La Madeleine, 287.—Triumphal Arches, 287.—Vendôme Column, 287.—Bank of England, 288.—Weinbrenner, 288.—Church of St. Isaac, 288.—St. Pancras Church, 288.—Schinkel, 289.—Von Klenze, 289.—Mediæval Tendencies, 289.—Romanesque Revival, 290.—Church of St. Michael, 290.—Heinrich Hübsch, 290.—Munich School, 290.—Secular Structures, 290.—New Pinakothek, 291.—Carlsruhe School, 291.—Revived Gothic, 292.—Heideloff, 292.—Zwirner, 293.—Revived Roman, 293.—Schinkel School, 293.—Berlin Style, 294.—Hanoverian School, 295.—Vienna School, 295.—"Old Christian" Style, 296.—Maximilianic Era, 297.—Bürklein, 297.—Renaissance Revival, 298.—Semper, 298.—Architectural Restorations, 301.—Later Gothic School, 302.—Gothic School of Cologne, 302.—Summary, 304.
2. *Development of Modern English Architecture*: Sir Christopher Wren, 305.—Later Architects, 305.—Batty-Langley Gothic, 306.—Grecian Revival, 306.—St. George's Hall, 306.—Exchange Buildings, Liverpool, 306.—Royal Exchange, London, 306.—"Stucco" Era, 307.—Gothic Revival, 308.—Transitional and Mixed Styles, 308.—Mullioned Windows, 309.—Victorian Gothic, 309.—"Queen Anne" Style, 311.—R. Norman Shaw, 311.—Japanese Art, 311.—Ecclesiastical Buildings, 311.—Cathedral Restorations, 312.—Sir George Gilbert Scott, 312.—George Edmund Street, 312.—New Bishoprics, 312.—Cathedral of St. Albans, 313.—Truro Cathedral, 313.—Public Buildings, 314.—University Museum, Oxford, 314.—Kemble College, 314.—New Law Courts, London, 314.—Albert Memorial, 315.—Wallace Memorial, 315.—Horticultural Society Gardens, 315.—Royal Albert Hall, 315.—South Kensington Museum, 316.—Colonial Offices, 316.—Town-halls, 317.—Educational Buildings, 317.—Natural History Museum, 318.—Club-houses, 318.—Charitable Institutions, 319.—St. Thomas's Hospital, 319.—London Street Improvements, 319.—Holborn Viaduct, 320.—Commercial Buildings, 320.—The Store, 320.—Hotels, 321.—Railway-stations, 321.—Apartment-houses, 321.—Dwelling-houses, 322.—English Architecture in India, 322.—Financial Buildings, Calcutta, 322.
3. *French Architecture*: The Louvre, 323.—"Gares," 323.—New Hôtel de Ville, 324.—Mairies, 324.—Eiffel Tower, 324.—Churches, 324.—Theatres, 325.—Grand Opera-house, 325.—Monte Carlo Theatre, 325.—Eden Theatre, 326.—Palace of the Trocadero, 326.—École des Beaux-Arts, 326.—Parisian Dwelling-houses, 326.—Seaside and Suburban Houses, 326.
4. *Architecture of Belgium, Holland, etc.*: Palais de Justice, Brussels, 326.—Antwerp Bourse, 329.—New Art-museum, Amsterdam, 329.—Vienna Rathhaus, 329.—Hungarian House of Parliament, 330.—New Fondaco dei Turchi, 330.—Florence Duomo, 330.

AMERICAN ARCHITECTURE.

- I. *ARCHITECTURE OF THE AMERICAN ABORIGINES*. 331
- Mound-builders, 331.—Aboriginal Peoples, 331.—Architectural Remains, 332.—Palenque, 332.—Ruins of Mitla, 332.—Teocallis, 333.—Buildings of Tenochtitlan, 333.—Huitzompán, 333.—King's Palace, 333.—Buildings of the Incas, 334.—Temples of the Peruvians, 334.

II. ARCHITECTURE OF THE EUROPEAN RACES IN AMERICA 335

1. *Mexican Architecture*: Church of San Francisco, Tula, 335.—Merida Cathedral, 336.—Cathedral of Mexico, 336.—Church of Chihuahua, 337.—Parochial Church at Lagos, 337.—Belfries, 337.—Cathedral of Puebla, 337.—Church of San Francisco, Mexico, 338.—Sagrario Metropolitano, Mexico, 338.—Cathedral of Leon, 338.—Works of Tolsa, 338.—San Teresa la Antigua, 339.—Public Buildings, 339.—Ayuntamiento, 339.—The Minería, 339.—Mercados, 339.—Portales, 340.
2. *South American Architecture*: Rio Janeiro, 340.—Bahia, 340.—Buenos Ayres, 340.—Lima, 340.—Cuzco, 340.—Church of the Jesuits, Cuzco, 340.—Arequipa, 341.—Cathedral of Santiago, Chili, 341.—Dwelling-houses, 341.

III. ARCHITECTURE OF THE UNITED STATES AND CANADA. . . . 342

1. *Colonial Period*: Earliest Structures, 342.—Eighteenth Century, 342.—Gambrel Roof, 342.—Colonial Dwelling-house, 342.—Colonial Architects, 343.—Early Ecclesiastical Structures, 344.—Cathedral of St. Louis, New Orleans, 344.—Progress of Colonial Architecture, 344.—Dwelling-houses, 345.—Public Buildings, 345.—Independence Hall, Philadelphia, 345.—National Capitol, 346.—White House, Washington, 346.—State-house, Boston, 346.—Churches, 346.—St. Michael's Church, Charleston, 346.—Christ Church, Philadelphia, 346.—Old South Church, Boston, 347.
2. *The Nineteenth Century*: Revivals of Styles, 347.—Decadence of Imitation, 347.—Modern Progress, 348.—Characteristics of Modern Architecture, 348.—Classes of Modern Buildings, 349.—National Style, 349.—Classic Revival, 350.—American Vernacular, 351.—Vernacular Construction, 351.—Renaissance, 352.—Gothic, 353.—Victorian Gothic, 353.—Present Movement, 354.—"Queen Anne," 354.—Brick and Terracotta, 354.—Iron and Stone, 355.—Timber-construction, 355.—Mill-construction, 355.—"Free Classic," 355.—Romanesque, 356.—Japanese, 356.—Architects, 357.—New Movement in Architecture, 357. *Church-architecture*, 357.—St. Patrick's Cathedral, New York City, 358.—Trinity Church, New York City, 359.—All Saints' Cathedral, Albany, 360.—Garden City Cathedral, 360.—Holy Communion Church, Philadelphia, 361.—Tabernacle Church, Philadelphia, 361.—Church of St. James the Greater, Philadelphia, 361.—St. Stephen's Memorial Church, Lynn, 361.—Cathedral of Notre Dame, Ottawa, 361.—Church of Our Lady of Perpetual Help, Boston, 362.—"New" Old South Church, Boston, 362.—Trinity Church, Boston, 362.—Mormon Tabernacle, 362.—Synagogues, 363. *Public Buildings*: Government Buildings, 363.—The Capitol, 363.—Treasury and Patent-Office, 363.—Pension Bureau, 364.—Bureau of Engraving and Printing, 364.—Parliament Houses, Ottawa, 364.—New Château St. Louis, Quebec, 364.—Custom-houses, 364.—New Custom-house, St. John's, N. B., 365.—Mints, 365.—Post-offices, 365. *State and Municipal Buildings*: State Capitol, Albany, 366.—State Capitol, Hartford, 366.—City-hall, New York City, 367.—New City-hall, Philadelphia, 367.—City-hall, Albany, 368.—Allegheny County Court-house, Pittsburgh, 368.—City-hall, Chicago, 369.—New City-hall, San Francisco, 369. *Libraries*: Billings Library, Burlington, Vt., 369.—Library at Woburn, 369.—Lenox Library, New York City, 370.—Ridgway Library, Philadelphia, 370.—Public-school Library, Dayton, 370.—Public Library, Boston, 370. *American Theatres*. Academy of Music, Philadelphia, 371.—Casino, New York City, 371.—Metropolitan Opera-house, New York City, 371. *Museums and Art-galleries*: Art-museum, Cincinnati, 371.—School and Museum of Fine Arts, St. Louis, 372.—Art Institute, Chicago, 372.—Museum of Fine Arts, Boston, 372.—Memorial Hall, Philadelphia, 372.—Academy of Fine Arts, Philadelphia, 372.—National Academy of Design, New York City, 373.—Metropolitan Museum of Art, New York City, 373.—Museum of Natural History, New York City, 373. *Club-houses*: Union League Club-house, New York City, 373.—Union League Club-house, Philadelphia, 373.—Masonic Temple, Philadelphia, 373. *Hospitals and Asylums*: Hudson River State Hospital for the Insane, 374.—Hartford Orphan Asylum, 374.—Napa Lunatic Asylum, Cal., 375. Penitentiaries and Jails, 375. *Educational Institutions*: Harvard College, 375.—University of Pennsylvania, 375.—Stone Hall, Wellesley College, 375.—Massachusetts Institute of Technology, Boston, 376.—Columbia College,

New York City, 376.—University of Toronto, 376.—Girard College, Philadelphia, 376.—Public Schools, 376. *Commercial Structures*: Stores and Warehouses, 377.—Iron Fronts, 377.—Banks and Office Blocks, 379.—National Bank of the Republic, Philadelphia, 379.—Insurance Company of North America, Philadelphia, 379.—Haseltine Building, Philadelphia, 379.—Bullitt Building, Philadelphia, 379.—Drexel Building, Philadelphia, 380.—Independence National Bank, Philadelphia, 380.—Keystone National Bank, Philadelphia, 380.—Mutual Life Insurance Company of New York, Philadelphia, 380.—Columbia Bank, New York City, 381.—Astor National Bank, New York City, 381.—Manhattan Bank, New York City, 381.—United Bank, New York City, 381.—Mills Building, New York City, 382.—Tribune Building, New York City, 382.—Post and Mortimer Building, New York City, 382.—Pullman Palace-car Company Office Building, Chicago, 383.—Railway-stations, 383.—Waterworks, 384. *Exchanges*: Produce Exchange, New York City, 384.—Chamber of Commerce, Cincinnati, 385.—Cotton Exchange, Galveston, 385.—Exhibition Buildings, 385.—Music and Exposition Hall, St. Louis, 386. *Dwellings*: Old Colonial, 387.—House-planning, 387.—Regularity of Plan, 388.—Modern Plan, 388.—The Fireplace, 388.—The Hall, 388.—Country-dwellings, 389.—Seaside Cottages, 390.—City-dwellings, 390.—Apartment-houses, 394.—The Berkshire, 395.—Central Park Apartment-house, 395.—Tenement-houses, 396. *Hotels*: City Hotels, 397.—Suburban and Country Hotels, 398.—Ponce de Leon Hotel, St. Augustine, 398.—The Alcazar, 398.—Saratoga Hotels, 399.—Memorial Monuments, 399.—Bartholdi Monument, 400.—Conclusion, 400.

GLOSSARY	401
LIST OF ILLUSTRATIONS	419
INDEX OF ARCHITECTS, ARTISTS, AND SCULPTORS	425
GENERAL INDEX	429

PART I.

ANCIENT ARCHITECTURE.

ARCHITECTURE.

INTRODUCTORY.

IN common parlance a distinction is made between ARCHITECTURE and BUILDING. While the purpose of the latter is to subserve only the material needs of life, the former aims to gladden the eye and to awaken the emotion and imagination of the spectator.

Definition.—Art in its stricter sense seems really to be included in Architecture; for while by *the Arts* we mean to imply all that man can do—all that he consciously creates—we use the term “Art” to include only those processes by which he endeavors to give expression to his emotions and ideas and to awaken the emotions and ideas of others. For this reason the term “Architecture” has been applied to artistic building, in distinction from the constructive art of Engineering. Just as the ideal and material tendencies develop hand in hand in civilization as a whole, so in the ordinary course of things must Architecture and Engineering be considered as distinct yet closely-linked departments.

But as in the development of civilization it is seldom that one of these tendencies reaches its fullest realization, since all the phenomena of life are the result of the reciprocal action of both, so in Architecture the ideal rarely predominates, because all its creations need the co-operation of a multitude of material factors each of which exercises its influence over the resultant form. On the other hand, every structure called into being by the art of building possesses an external form that has been imparted to it designedly, and is the outcome of that ideal tendency which can never be entirely suppressed.

The separation of the more material, constructive part of the vast domain of the building art, under the name of “Engineering,” from the more ideal part, which we assign to Architecture, is therefore based more upon custom than upon theory, but, since the division has been made, there is no reason why we should depart from it. It is not only possible, but it is also proper, to treat of that department of the art of building with which the present volume is concerned from an entirely ideal standpoint, leaving to other hands the task of considering the subject in its purely material aspect. A complete separation is, of course, impossible, since in every individual structure both tendencies exist and by their interweaving give character to the whole.

It has often been said that Architecture is the most faithful mirror of its period. This is true, but it is true because the material and the ideal side of culture, in complete combination, speak in the creations of Architecture. As the spirit of the age may be known by its architecture, so is it also voiced by all other works that the hand and the intellect of man have conjointly created. All this is inscribed in grander characters, more readily deciphered by untrained eyes, upon the huge masses moulded by Architecture than it is upon the lesser products of art, the crowded and often indistinct lines of which can be traced only by the trained eye of the connoisseur. The connection with the culture of the age is the same in all cases.

Analysis of Architectural Forms.—All works owe their existence to external requirements and circumstances; their shape, to the formative genius of man. This formative genius and all the works created by it may therefore incite us to their study in equal proportions, but especially in the two following directions:

(1) Methods of construction and workmanship—namely, *Technique* and the necessary implements. The study of these belongs to TECHNOLOGY, which teaches us how to proceed in order to call this or that design into being, what materials to choose, and how the implements must be shaped that we may give to those materials the desired appearance.

(2) The external appearance itself, as impressed upon the materials by human handiwork, and as causing them to fulfil both material needs and ideal demands. This study of form is called *Tectonics*, and treats alike of objects large and small, since its fundamental rules are the same whatever the dimensions of the object treated.

To our special province falls the consideration of Tectonics in its relation to objects which in comparison with the human body are of great bulk, and in which the materials are used in such quantities that the combined efforts of many handicrafts or of mechanical appliances are needed to fashion them.

Architectural Form an Expression of the Age.—Our next step is to deduce our theory of Architecture from the ideas advanced above, and then to ascertain how far this theory holds good in the course of historical development; for almost every nation as well as almost every age, partly from external exigencies, but principally in consequence of a different conception of the ideal element, has developed a distinct series of forms, in which its own mental status is most truly mirrored, and which is the most definite expression of its entire civilization.

Thus to the tutored eye all works of art, and especially those of Architecture, mirror the life and the intuitions of a people. Their buildings are milestones in their history; all their works of art are examples of the entire development of their culture, and in accordance with the difference of peoples and times the style of their art-creations varies.

Ideality Expressed in Design.—When we review the civilizations of the various peoples that have wandered over this terrestrial globe, we

cannot deny that some have solved far more completely than others the problem of the ideal which presents itself to mankind. Thus there are apparent in the architecture of many nations a progress toward ideality, a comprehension of the intellectual aspects of Architecture, and an aptitude to give them expression which other nations have not attained in so high a degree.

We may say, therefore, of a people or of an age that their productions are as a whole beautiful, because the resultant forms rest upon the basis of true principles; while we may assert that those of another people or of another age are tasteless, that their art was undeveloped, or that it took a wrong direction. This does not depend upon the choice or power of the artists, but is based upon the perceptions and culture of the people or the age to which those artists belong. This culture and this mental nature form an atmosphere from which each individual artist can but slightly free himself, since he is himself a product of it and exists within it.

What the artist's eye sees daily during his development and education, what his ear perpetually hears, the ideas imbibed in his earliest childhood, all he has learned at school or in the workshop or has acquired from the thoughts and sayings of his companions,—all these and a thousand other things so work in him that they determine the direction of his genius, so limiting his perceptive powers that even the greatest among artists remains a child of his period and an exponent of his people.

In order, therefore, to judge aright of the performances of any nation in the domain of Architecture, we must conscientiously view it from this standpoint; we must ask, "How did it deal with the problem of existence? How intense was its desire to rise above the material into the intellectual? What were its ideals, and how did they find expression in its Architecture?" We must furthermore inquire to what extent the standard of each nation and age was just, how far it presented us with a series of forms at once rational, correct, and worthy of imitation.

Art-principles.—There is no such thing as an intrinsically and absolutely beautiful form: what is beautiful in one case is not so in another; and yet there are general rules determining beauty of form. It is not chance, caprice, or personal taste that here constitutes law, but general principles, which, whether the artist knows them or not, lie at the root of all design in the realms of art; and as these rules are more or less followed or ignored, so more or less perfect or imperfect works of art are the result.

Standards of Form.—The productions of those ages and peoples which as a rule we can accept as models help us to form a standard even in individual cases. With these monuments as criteria, and supported by their authority, we can decide point by point whether this or that is beautiful or deformed, or we can assert that we must construct an object in a specific manner in order that it may be beautiful. Certainly this is not the only method we can employ: logical reasoning is as sure an

authority. But this theory is difficult to grasp, and is of later development than the other.

Development and Decay of Styles.—Before works of art existed there were no rules of beauty. Art-perceptions have among all peoples developed step by step with art itself, and it was not until a whole series of works of art existed that men deduced rules from them, and even then only in the higher branches. In the lower, men worked on unconcerned, the working rules unknown; and certainly this was no disadvantage, for one might almost assert that in the higher spheres of art the first faint symptoms of decline date from the moment when the principles had been clearly evolved and brought into a system that should thenceforward be the basis of the art of design. It is in the nature of things that when the fulness of growth has been reached decay must commence, and even so it lies in the nature of things that man must reach his highest development before he concerns himself with the establishment of principles. Through the recognition and establishment of laws a system of set forms takes the place of the original development of forms, and this rigid system, which recognizes the form itself as something self-determined, is above all the prime cause which, at first slowly, but afterward with quickly-increasing rapidity, brings on its decay.

THE THEORY OF ARCHITECTURAL FORMS.

THERE are two methods by which a system may be formulated. One of these requires the comparative study of extant examples, which we must conscientiously analyze. As the naturalist by dissection investigates the laws according to which Nature has constructed all living and organic bodies from their primitive atoms, so must the art-critic proceed by the mental dismemberment of works of art to discover the laws according to which they were fashioned. He will learn to separate the accidental from that which, since it is repeated consecutively, may be considered regular, and that which he thus finds to be constant he will consider to be a rule according to which a new work might be created in a similar spirit. The second method is to predicate a fundamental philosophical principle and out of it by argument and deduction to evolve a system and formulate rules.

The goal can be best reached only by a union of both methods. The naturalist knows that all that he investigates, all that he dissects and reconstructs, is no product of chance or caprice. Every work of Nature proves the perfection of its Creator. Though apparently accidental structures exist, these are not really the result of chance, but are deviations caused by the influence of external circumstances, and may be investigated, accounted for, and reduced to law. We cannot thus conclude concerning human handiwork, but must first prove whether true perception or blind chance guided the worker.

I. PARALLELISM BETWEEN NATURE AND ART.

Fundamental Principle of Art.—When we compare with one another different entire series of the monuments of those peoples and periods of which we can truly say that they stand nearest to the ideal of culture, and are consequently the most perfect extant, we always find a fundamental principle which expresses the great natural law that no part owes its existence entirely to chance, but that every detail stands in direct relation to the general purpose and to the form of art in which that purpose is embodied.

Infinitely varied as are the creations of Nature, each carries on within itself all the functions of organic life and has all the organs which are essential to it under the conditions in which it is placed, but none which are superfluous. In like manner, a perfect work of art, both in its general design and in its details, has those parts and forms which are necessary

for the fulfilment of its purpose, and all these parts and forms so arranged as to be most in keeping with that purpose. But, like Nature's products, sprung from the hands of an infallible Creator, the "truly perfect" work of art has no organ which is purposeless, no form which is not in conformity to the general design.¹ Each work of Nature has a character of its own, and so too is character the first requisite of beauty in any work of art.

Characteristics in Art.—Again, as each organic species can exist only under certain circumstances, and as each organism shows its own individual peculiarities to a limited extent only, so entire series of buildings which serve the same purpose and arise under the influence of similar outward conditions come under our observation, and resemble one another almost as much as the individuals which form a species in the animal kingdom. Local and climatic influences determine for a related species functions somewhat different, organs somewhat modified, and some slight variation of outward form, and in a similar way local influences show themselves in structures of the same class, even when the purpose of all the works in the whole series is identical.

If we apply the term "character" to that total fitness for a given purpose which is common to all the works of a series, we must assign the name of "originality" to the equally full correspondence which exists between the outer appearance and the special problems presented by individual works.

The Beautiful in Art.—Even as the myriads of species, genera, and families that we encounter in the entire realm of Nature are all different, and yet all perfect and beautiful because throughout this diversity is exhibited the great natural law of full agreement between requirements and outward appearance,² so likewise in the domain of Architecture numberless monuments fashioned for special or individual purposes come before us, and all may be called beautiful, however multifarious their differences, so long as all express their purpose in an original and characteristic way, while none are beautiful which have borrowed for other purposes forms that when used rightly were characteristic, and therefore beautiful.

Though every product of Nature may be considered perfect in its kind, we yet recognize natural kingdoms which differ as a whole in the

¹ Organs change their function in the course of the struggle of the organism to adapt itself to a changing environment. The same constant adaptation of structure has everywhere in the animal kingdom left organs which once were useful, but now are not. Our bodies have many such. Exactly the same occurs in art. Every work of art exhibits "survivals"—namely, parts which were once of use, but are now employed from habit and have no significance save an archaeological one. Much of our applied conventional ornament is a survival of parts which once had a purpose. Abstract perfection exists neither in art nor in nature save in the sense of perfect adaptation to the environment, and this kind of perfection is possible only when for long ages the environment does not change. In both art and nature this perfect specialization brings about extinction if the environment changes.—ED.

² This full agreement rarely, if ever, exists in nature or in art. Conditions change, and works of nature as well as those of art change in their attempts to adapt themselves to the altered requirements.—ED.

degree of organization of their component species, and even in the same kingdom we speak of a higher or a lower organization of animals and plants. In a similar way the purposes of structures, and therefore their outward design and ornamentation, may be called higher or lower, and we may no more produce the effect of beauty by taking a series of forms belonging to a higher structure and applying it to one designed for a lower purpose than may in Nature a lowly organism assume the outward form of one more highly organized. Only in so far as the purpose agrees can forms be similar.

Since human creative power is not so infallible as the eternal energy of the Creator, the character impressed upon works of art is less defined than that exhibited by the works of Nature; so by occasionally borrowing a cycle of forms the works of art sometimes acquire a greater apparent similarity than really exists.¹

2. LAWS OF CONSTRUCTIVE ART.

The character or distinctive appearance of a building depends essentially upon the grouping of its leading masses. This grouping is governed by the same law that obtains in the creations of Nature, and that gives to each individual organs of the size and shape best fitted to enable it to fulfil its mission in the economy of the universe. In the same manner must the architect fix the number, size, and relative position of the spaces which in their entirety compose the required building. The more accurately he conceives his idea, the more fully he realizes it in his distribution of spaces, the nearer will he approach Nature, and consequently the more perfect, characteristic, and beautiful will be his building.

It is this which shows in the highest degree the artistic and creative power of the designer. This is especially the case when the size and relations of the spaces to be obtained do not depend entirely upon the material requirements, but more or less upon the impression they are to make and the idea they are intended to convey to the spectator. This impression and this idea must to a certain extent be embodied in the plan, and thus the building owes its leading character to the combination of ideal and material requirements in the arrangement of its spaces. This is consequently the first and most important stage of artistic creation.

In our determination of the extent to which this artistic creation shall represent Nature's mode of work we must, according to the greater or lesser amount of idealism which the resultant building is to express, decide to how great an extent the mere external requirements of space shall be dominant and how far they shall be subordinate to the demands of the ideal.

Order.—In this case artistic creation can again borrow one of the fundamental rules of natural creation. This rule is *Order*, and the artist must more particularly be guided by it when the exact arrangement of

¹ The same thing occurs in nature. Thus, a whale is a mammal in the form of a fish.—ED.

the spaces required cannot be mathematically determined. The arrangement of a building demands that the size and number of the individual apartments shall bear a clearly-defined geometrical relation to one another. A certain geometrical relation of length, breadth, and height produces even in a single room a harmonious and pleasant appearance, just as harmony of tone is based upon a determined simple law of numbers. As for the separate apartments, so also for the building itself a simple, clear, and well-defined geometrical ratio can be found. The number of rooms should depend on a law of a nature similar to that which gives the numerical ratio of the separate apartments. The greater and lesser apartments should be grouped according to the principles of unity around a centre or around one or more axes, and the higher and lower ones should be placed side by side or built one over another.

Symmetry.—The great law of symmetry which pervades Nature is also a fundamental law of artistic construction, but, as Nature does not sacrifice symmetry to the purpose she has in view, the architect should not place this law above the practical requirements of a building. Here we can recognize the genius of the master, because in this he must use discrimination in the highest degree.

Not only does regard to the utility of a structure compel the architect to deviate from the law of symmetry, and even that of harmony, but a multitude of irresistible forces and elements also restrict the construction of a building by the interference, as in Nature, of one law with another. Complete artistic success demands abundant room, so that the structure may arise unhampered save by the requirements of the essential rules of art. If the work is to reach full artistic development, every means which artistic requirement renders essential must be employed.

The tree does not seek its nourishment so deeply in the soil where it is rooted that it cannot be dwarfed by lack of space, while the weight of the snows and the fury of the tempests, exerted unequally upon its various parts, prevent it from attaining that absolute symmetry which Nature designed. In this way forms which are one-sided even to deformity and mutilation may result from the crossing of their simple law of growth by other natural forces.

In a similar manner an architectural work may be restricted by want of space, lack of materials, climatological conditions, etc., and thus cannot absolutely adhere to the artistic law. It must struggle along and develop as best it can within the scope of its circumstances, and thus many works of art, like many organisms, never attain full development. Yet there is a peculiar charm even in this. Would a landscape in which every tree stood in strict symmetry of position and growth like the ideal of an orange tree be pleasing to our eyes? Just as we are forcibly attracted by the individuality that each tree assumes by reason of the interference of so many natural forces with its natural law of growth, and are charmed by the wonderful variety of forms that has resulted while we follow with interest the grouping of different parts of

a living tree, so are we fascinated by the stamp of originality and the picturesque appearance which a building obtains from the influence of external circumstances.

But, further, when the storms of time have wrought their changes on the completed structure, when they have cracked and scarred it as storms split and tear the limbs of a tree, when mosses and lichens, soil and cobwebs, and even a varied vegetation, have covered its walls, then its original beauty is enhanced, and the ruins, whether singly or in combination, possess a charm peculiarly their own. It is true that this charm differs from that possessed by a complete work of art the analogue of which is a perfectly symmetrical, fully-developed, and erect tree. But this picturesque appearance of the tree is not the result of any definite intention of Nature, nor can we in our search for originality ever succeed by pruning and binding the branches in producing more than a caricature.

The laws of Nature are rigorous, and all that men can do for the tree that it may not become a distortion is to remove all obstacles which impede its development, and to contribute whatever its nature demands. Thus also in Architecture, when the artist attempts to supply what Time only can furnish, or when he uselessly and purposely violates the laws of artistic construction, of harmony, and of symmetry, only a distortion is the result. This law of harmony may no more be sacrificed to a clearly false artistic intention than may utilitarian purpose be likewise sacrificed, for it is and ever will be the foundation of all creation in the domain of art as in that of Nature.

Geometrical Construction.—The question has often been raised whether the architect in designing ought to employ the compass and square to formulate a geometrical scheme of the plan and details of his building, or whether he should arrange his dimensions and proportions in artistic freedom, following his genius only. The answer, as regards general proportions, is that where extraneous demands do not require originality, and where size and form are not imperatively prescribed by utility, a symmetrically-arranged building with its parts in harmonious relation to one another is always to be expected;¹ but whether in the attainment of this the artist is guided by his own ideas of proportion and harmony, or, distrusting his own powers, has recourse to geometrical constructions, depends entirely on the individual case.

3. MATERIALS OF CONSTRUCTION.

To enclose, cover, and separate the spaces, and to give to the structure its appropriate external form, we make use of the masses which are composed of the building materials. All materials have special properties, and in their choice Nature is again the master's infallible guide. She has built the mountains of solid rock, but the slender tree of elastic wood,

¹ This must be taken with some reserve. A large building may be regarded rather as a group than as an individual; its parts must be symmetrical, and the whole must have a leading feature.—ED.

that it may bend before the fury of the blast and spring back into its original position. She has constructed of inflexible material the skeletons of animals, but has covered the joints with elastic tissue, and has made the surrounding muscles soft and tender, yet tough enough to be the instruments of the energy which moves the animal on the earth or through the air.

The architect has a less ample choice of materials than Nature, yet he will also choose the strongest and best for a fabric that is intended to outlast centuries. Those parts which bear a superincumbent weight he will construct of the hardest and most resistant materials, while those which are present only for their own sake or to present a beautiful series of forms will be of materials that can be easily worked. But the architect must not only consider the requirements arising out of the building itself, but, if his building is to endure, must also provide against the assaults of external forces. Stone crumbles through exposure, woodwork is destroyed by fire, rust and impact deprive iron of its strength, and, according as one or another of these foes is through circumstances most to be feared, so must the materials of the structure be chosen.

Durability.—It is true that in a structure erected for a modest purpose we cannot always aim at solidity alone, nor should we expect too much from a building which is designed to serve only temporary requirements. We must, however, increase our demands as the undertaking becomes more ideal. If the object is to serve an external requirement only, the structure, even if designed to be permanent, can be renewed after it has been impaired by the elements; but if it is to stand as the expression of a great idea, if it is to demonstrate to the contemporary world and to future generations what were the emotions of a people and a period, or if it is to be sacred to the Most High, it must be made of the choicest and most permanent materials—must be a monumental pile enduring as the mountains, not ephemeral like the forest foliage which is borne away by the autumn winds after the fulfilment of its summer mission.

4. CONSTRUCTION.

A prime consideration in the selection of material is the manner in which the separate pieces can be united and the amount of strength which will result from their union. Construction, which unites these masses and by their union encloses the spaces, is essentially dependent upon these qualities, and yet is itself one of the most essential factors in the artistic success of the fabric. It is the province of construction to arrange the necessary spaces and to enclose them with materials, also to combine the prescribed masses of materials so that, firmly united and banded, they may enclose a space. The art of construction also exacts variety in the form and size of the masses, and this variation must accord with the nature of the material itself and the dimensions of the space to be enclosed; yet almost every case permits of numerous methods.

The style of construction affects most essentially the æsthetic aspect

of the design, for the question will perpetually arise which out of many possible modes of construction shall be chosen when neither the dimensions of the rooms nor the qualities of the materials exact a special one. If spaciousness is the only object, rooms may be enclosed and covered with the least possible expenditure of material and in the simplest manner, but to produce an æsthetic result a more complex construction is demanded, and its realization will require more material.

Here also Nature gives us an unerring example. How wonderfully does she construct the skeleton, the sinews, the muscles, and the skin which surrounds them! Nowhere a superfluous mass, nowhere a heedless connection! For the ends of mere existence an organism may be very simple and light in structure, not requiring for the function of locomotion the strength which resides in muscles. The weight of its body is not sufficiently great to need the support of a skeleton. But the higher we ascend in the kingdom of Nature, the more complicated are the organisms and the vaster are the masses which enter into their construction, not only that they may withstand external forces and perform their complete functions, but also because a higher place in Nature's economy demands a higher organization and greater exertion. Nature's principles of construction yield for the guidance of Architecture the following law: The simplest methods should not always be adopted, for to the extent that the aim is ideal it must be expressed by more complex methods and designs. We must not limit the material to the minimum needed for safety, but must provide an overplus proportionate to the grandeur and ideality of the edifice.¹

5. STRUCTURAL DETAILS.

The material cannot of course remain in its original form, but must be worked and reduced to shape. As the masses of the edifice enclose space, so is the edifice itself bounded by infinite space, and the boundaries which result from this enclosure define the outlines of the structure. These outlines must in their vast totality indicate the character and purpose of the building, while their every detail must clearly denote what relation a particular portion bears to the whole and how it contributes to the general effect. This proportioning of the several constructively united parts to one another is in the German language called the *Gliederung*; literally, the "membering." The term includes that part

¹ The parallel between Nature and Art must not be carried too far. Whether the forms of Nature were, according to the still general belief, created each one perfectly adapted to its environment (a belief in opposition to every-day experience), or whether, according to the more enlightened view constantly gaining ground, all forms of life are the result of the interaction of external and internal forces, each organism bearing in itself certain tendencies resulting from the environment of its ancestors,—in neither case can Nature be said to have an ideal aim. The aim is practical. Man alone has an ideal purpose. His ideas of the beautiful are derived from nature and from the conditions of his existence. The Art of every race is the result of the inherited tendencies of that race (caused by the environment of its ancestry) and the conditions imposed by its surroundings. The climate, the scenery, the available materials, poverty or wealth, are so many factors which, acting upon races whose inherited tendencies are diverse, produce diverse styles of art.—ED.

of proportion which is not imperatively prescribed by the requirements and also the arrangement of the details. The membering will be of least importance in mere utilitarian structures, but will become more prominent the more the æsthetic idea predominates; and in the ideal realization of the highest conceptions it exacts that no dead masses, as they are called—namely, portions unnecessary to the artistic idea—be allowed, but that every part shall bear its characteristic detail.

The details—that is, the forms of the smaller separate parts—are not directly dependent on the general character of the whole structure, which can only make its influence felt in a subordinate manner, but must primarily depend on the nature of the materials, the kind used in each individual part, the manner in which the parts are connected, and the purpose which the connection of a series of parts into a constructional member serves in the entire construction. When great strength and consequently ponderous masses are needed, the effect of strength must be made clear to the eye by large, severe, massive details; while where the masses to be decorated serve no statical or mechanical purpose, but owe their presence to æsthetic demands, the existent relation may be expressed by light and graceful features.

The details must not only indicate the intrinsic nature and functions of the individual parts of the construction, but must also enable the eye to bind and unite apparently incongruous elements, must harmonize discordances and detach similarities. Supporting and supported structures have each their appropriate detail, and so have independent detached masses. The detail is partly essential and partly conventional. In this respect it is like a language which expresses individual thoughts. Languages differ according to races and nations, but not at random, since each tongue is absolutely dependent on the natural affinities and civilization of the people who speak it, and develops with their culture.

Language of Forms.—In the same way the language of forms, of detail and decoration, differs with races and times, progresses with the civilization of a nation, and ascends hand in hand with the problems which are presented to Architecture by the modes of life of the people. We can thus explain why the general purpose and character of the whole structure do not exert any direct influence on the decoration. As speech develops with the necessity for new expressions and sharp definitions, so is it also with the form-speech of Architecture. As languages vary in their power of expression, in their euphony and harmony, so does the language of form, expressed in the architecture of one nation, differ from that of others. That this is the case is proved by the fact that the speech and the language of form of a people usually exhibit similar properties and reach an equal development. Language develops according to well-defined laws. Certain fundamental sounds and a few general rules for the relation of sounds are common to all; definite fundamental rules regarding various modes of expression are repeated everywhere. The declensions and conjugations in all languages bear a certain relation. In the

same way, certain fundamental elements of decoration are found everywhere, accompanied by a few fundamental principles.

All the forces that architectural structures are calculated to withstand are static and dynamic, and their operation depends on purely mathematical principles. Hence the structures which subserve or oppose these forces have only statical functions, and the operation of these functions can give expression to geometrical forms only.

Laws of Proportion.—One of the most widespread laws of proportion is the division of every whole into three parts, of which the middle, or principal, is characteristic of the functions to be performed, the lower, or base, brings it into relation with its foundation, and the upper either furnishes a means of transition to the parts above or forms the termination. This law is true alike in grammar and in form. All nations divide every structure into foundation, wall, and roof; every pillar has its base, shaft, and capital, and only in lower or degenerate forms do we find one of these omitted or misplaced.¹

Analogies of Form.—We may also consider the law of languages as a law of Nature, and discover in the building up of its systems the closest analogy with those laws of Nature which have been previously shown to be of normal application to artistic creations. All our analogies for the general arrangement and distribution of parts were found in a province where the absolute supremacy of a few fundamental laws holds all individual subjective creation in abeyance; so that the most perfect execution of a given task by the artist lay in the thorough identification of his ideas with the laws of Nature, and perfection depended in no degree upon individuality, while now, in the construction of our building, we reach an acting principle which, though analogous to an unalterable law of Nature, gives, like language, more room for individuality in fashioning details.

When once a command of language has been gained, the same idea can be expressed in many ways, its harmony and delicacy of expression depending upon the delicacy of perception possessed by the writer or the speaker. The same holds good in the language of form; here talent is all-powerful. In this province there is no direct rivalry with those omnipotent, infallible laws of Nature which bring the most gifted and clearest intellect to feel its weakness; here man's powers are fully fitted for his task.

Ornamentation.—After the proportioning of the details comes the artistic shaping of the decoration of the various members and surfaces—that is, the ornamentation. This follows close upon constructive detail, and is even in many cases merely a continuation of it. The presence, position, and style of the ornamentation have so great an influence upon the expression of the purpose of the constructive members that decoration is as important as constructive detail. This is evident even in the arrangement of ornament. Decoration enjoys special freedom in its forms, since

¹ The Grecian Doric, always reputed to be æsthetically the nearest approach to perfection yet made, is an exception, as it has no base.—ED.

it is not hampered by constructive limitations and does not add more material, but serves solely the æsthetic idea which determined the arrangement of the masses and the methods of construction and guided the proportionment of the members.

Ornamentation also belongs to the language of form, and its shapes can have no relation to the structures of Nature, since speech and the formulating of particular ideas are not Nature's aim. What we consider the ornaments of a plant, as the flowers and leaves, are so only to our eyes, but in reality are as necessary to the life of the plant as are the stalk and the roots. They express no æsthetic ideas save such as are subjectively created in the human mind. Of course a perfectly useless ornament is out of place even in an architectural structure; the question as to its presence is analogous to that regarding the flowers and leaves of the plant. The character and ideal purpose of the edifice must determine the quantity and position of the ornamentation, and in a perfect structure the quantity must be neither too great nor too small. Its usefulness or uselessness does not depend on the material aspect of the work, which is here less important, but always on the ideal. Nature has given creative power to man alone, and therefore art, which is a portion of the divine fire reflected in man, is purely human.

Decorative Forms.—If all parts which fulfil constructive needs express those needs by strongly-marked geometrical forms, and if these constructive forms may be less massive when the parts have less to support or to hold, it follows that the purely-decorative forms of ornamentation may follow at will all the forms that the human intellect can grasp, that the eye can see or the mind imagine. It can choose intricate geometrical combinations or derive its forms from the vegetable or animal kingdoms, even including that highest of animal forms, the human body. Even imaginary animal and vegetable forms have a right to be represented. All possible objects of surrounding existence—tools and weapons, books and instruments, even the mountains and valleys with their trees and buildings—furnish material for ornamentation; yet all this must be arranged in accordance with the spirit expressed in the edifice.

The one external consideration by which decoration is limited is the material of which it is formed, and to the nature of which it must give full expression. In doing this it becomes inseparable from the building—not a merely accidental extraneous part of it, but a part of the essence which, with the body of the work, constitutes the art-creation. This consideration of the nature of the material necessitates the more or less extensive changes which have to be made in the original conception in order to make it conform to the given style. In ornamentation, as in proportion, there are most marked differences between the language of forms of different nations. Upon the range of their fancy, itself dependent upon their grade of culture, depend the number of their conceptions and the kind and grade of their style.

Color in Architecture.—Our attention has thus far been occupied with

the creation of form, but form never appears unaccompanied by color, and this latter element perhaps impresses the mind of the spectator even more than form. Thus Architecture has to deal not only with form, but also with color, which has especial influence in the more ideal part of the problem. In the choice of materials attention must be paid not only to their constructive suitability, but also to their harmony of color. When the choice of materials is not free and their colors do not harmonize with the general character of the building, the care bestowed upon construction and proportion must be doubled, so that the inharmonious character of the materials may be overcome, or, at least, diminished.

One of the chief problems in the choice of constructive materials is so to arrange them that their tints may be in harmonious relation with the idea of the building. Color also influences the constructive detail, since the shadows cast by bright materials are in stronger contrast than those cast by dark ones, and those cast by delicate tints contrast more strongly than those cast by deep ones; so that proportions do not appear of equal mass for all colors. It often occurs that, color excepted, all the other qualities of the materials are perfect.

As the raw material needs much preparation and must be brought into artistic form before it is capable of architectonic expression, so also the natural coloration is not always adapted to the representation of an architectural idea, and we must use an artificial scheme of coloration which can be applied locally to individual parts in order to give proportion, just as variety gives form. The effects of proportion given to the members of a building by colors, though they speak out sharply, are limited in their range; yet it is possible by means of color to denote the difference between heavy and light, supporting and supported structures—to tone down a rough form or to detach from one another forms which are not sufficiently distinct.

The principal use of color is, however, to bring out the decoration. Surfaces may be relieved by a rich play of colors without actual relief, and ideas may be with facility expressed by colors when the object they embellish calls for the widest possible range of imagination and fancy. Still, color has its own province, and to a certain extent its own series of forms, and must therefore be treated in its own manner. A harmonious interplay of colors, with correct proportion in the distribution of each, is characteristic of a fine work of art. In a truly artistic period color has never made use of artificial shadows to bring out artificial reliefs and depths, nor has it in any way been employed as a makeshift for form.

Conclusion.—We must content ourselves with the foregoing outline of the theory of Architectonics. As to the practice which is based on it—that is, the methods of solving according to its rules each individual problem, of proceeding rationally in the arrangement of every kind of building, of constructing various parts, as walls, windows, doors, halls, pillars, etc.—we can the less consider it in this connection, inasmuch as no theory of the development can be traced in the history of art. We mentioned

above that the laws of Nature often oppose one another, and that, as a clear result of a single one does not thus appear, forms are produced which the eye does not recognize as normal, but as freaks of Nature.

We find also in the history of art that the rational theory does not always dominate, but that, as in culture itself, all kinds of influences which may be external and unavoidable or may arise from deficient perception or false guidance make themselves felt. We have dwelt particularly on man's imperfect conception of the general laws of artistic creation and of his misunderstanding of their application to a particular case, and thus forms an almost fundamental law the operation of which prevents the untrammelled exercise of the ideal laws of Architecture. This does not result entirely from the individuality of the creative artists, but partly from the degree of culture possessed by the entire nation; and so by the side of the authority of theory appears the influence of tradition, which operates even more powerfully and has in a most conspicuous manner impressed itself upon the history of Art. The influence of tradition as it goes on with the nations has contributed more to the diversity of architectural styles than have the external necessities of climate. But as this can be dealt with only in a historical manner, and we shall therefore when we treat of individual styles, make it our especial duty to discuss how far the theories traced above have made themselves felt at all periods and in various climes.

PART I.

ANCIENT ARCHITECTURE.

THOUGH the most primitive peoples possessed mental powers which greatly surpassed those of the brute creation, we meet with nothing that can properly be called Architecture until a higher culture developed higher aims. But the development of this civilization did not progress simultaneously over all the habitable world: not everywhere was a substratum ready on which to build; and, though we may speak of the culture of races which accomplished these results thousands of years before our era, and possess magnificent monuments executed by them, other races have not as yet passed beyond the beginnings of civilization.

I. THE EGYPTIANS.

Probably the oldest monuments of Architecture are those transmitted to us by that wonderful race which dwelt on the north-eastern coast of Africa more than four thousand years ago, and which not only attained considerable political importance, but also left to the world a civilization which has served as a basis for the culture of all succeeding ages. The history of Egypt reaches into the remotest antiquity, and as far as we can trace it back it is that of a civilized nation. On the threshold of this history stands Mena, or Menes, who, coming down from Thinis (or This; in Egyptian, Teni), in Upper Egypt, nearly three thousand years B. C., built Memphis, his capital, adorned it with temples and palaces, and constructed immense embankments and extensive irrigation-works which fitted the land for cultivation. Granting that we have no remains positively proved to be his, still the pyramids overlooking the Nile near Memphis undoubtedly date from about three thousand years before Christ.

There are two prime motives which lead man beyond the most rudimentary civilization. The first is that dawning recognition of the power, grandeur, and eternal order of the universe which draws him to the Divinity and leads him to adore and love Deity as the fountain-head of the whole order of nature as well as the Ruler and providential Guide of his own individual fate. The second is the consciousness that the soul of man—that transformed Godhead which in life was clothed with a body, and which, like an image of the Godhead, is conspicuous here by its great deeds—has even after death a claim to reverence, since future generations owe much to the great of the past. While, therefore, man consecrates

temples and altars to the Divinity, he raises funeral piles to receive the bodies of the dead and erects monuments to their memory.

The wonderful fertility of Egypt, dependent on the annual inundation of the Nile—a phenomenon so regular that it could be calculated by the study of the stars—was likely to lead its inhabitants to a recognition of the forces and the masterly order of nature, compared with which man is so small and powerless. The conception of the uncertainty and brevity of life and of the immortality of the soul was deeply impressed on the character of the people and influenced all their ideas. Consequently, an intense and overpowering solemnity, a grand and reverential dignity, shine forth in all their representative arts.

The Priesthood.—The nation itself was divided into distinct classes, each of which had its definite part to perform. One class was in possession of all the knowledge and all the ability, and its duty was to direct the other castes and to determine their tasks. This class, as the most cultured, as the repository of all the intelligence of the nation, stood nearest to the Divinity, and formed a priesthood whose duty it was to offer sacrifices, to instruct the people, and to lead them to the Divinity through godliness. The insignificance and brevity of human life, as contrasted with the unchangeable grandeur of nature, induced the conviction that eventually the soul would return to reinhabit its earthly tenement, and led to a burial-ceremony whose chief aim was to preserve the body properly until the time when it should again assume the rank its owner held in life. (See Vol. II., p. 135.)

The Pyramids, the most venerable piles of monumental architecture known to us, are the sepulchres of kings, the sanctuaries of the dead. About forty of these structures, of different sizes, situated in groups, cluster around the "three giant pyramids" and stretch from them in two directions, northward to Abu-Roash, and southward as far as the Fayoum. Between them have sprung up villages which furnish names for these groups. The pyramids rise at angles of a little more than forty-five degrees, and are constructed partly of brick and partly of large blocks of stone, some of which latter are 6 metres ($19\frac{2}{3}$ feet) in length. The largest—commonly called the "Great Pyramid" (*pl. 1, figs. 1, 2*)—has a base of 250 metres (820 feet) and is 150 metres (492 feet) in height.¹

These, the most colossal sepulchral monuments in the world, exhibit more resemblance to those masses of material which compose the funeral mounds of other nations than to regularly-constructed buildings. They are monuments of primitive culture, but of a culture that possessed ample means and extensive appliances, and they indicate a highly-organized state and a strong central government to which everything was subser-

¹ The original vertical height of the "Great Pyramid" is variously estimated: by Vyse and Perring, at 480 $\frac{1}{4}$ feet; by Fergusson, at 484 feet; and by Piazza Smyth, at 485 feet. The length of each side, according to Vyse and Perring, was 764 feet, and according to Fergusson 760 feet. The present height is about 20 feet less than the original height, and the length of each side has been diminished about 18 feet. Many of the basement-stones are 30 feet in length and nearly 5 feet high.—Ed.

vient. As they now appear, partly buried by the sands of the desert and stripped of their smooth-coated granite plates, with the deep-blue sky overhead, they create an impression stronger than that evoked by the solid hills. Moreover, it appears that they grew to their present size by degrees: a small pyramid formed a nucleus, and over this were laid successive coats of material.

Connected with the pyramids which contain only small funeral chambers in their nucleus are other structures which exhibit architectonic development and serve to prove that these stupendous masses are in their simplicity a relic of still earlier times. Other tombs, of smaller dimensions, are scattered among these gigantic achievements of Architecture. There is thus presented the appearance of a burial-ground upon a large scale grouped around the pyramids.

The Sphinx.—The head of a colossal sphinx rises from the desert near the Pyramid of Gizeh and indicates a figure 25 metres (82 feet) high and more than 40 metres (131 feet) long (*pl. 1, fig. 2*).¹

Egyptian Dynasties.—The history of Egypt is reckoned by the dynasties that ruled over the country. The pyramids belong to the period of the earliest dynasties—the largest of them, to the fourth. They may be regarded as the works of the first bloom of Egyptian culture. A second flourishing period may be distinguished at the end of the third thousand years before Christ, in the time of the twelfth dynasty. From this age date the rock-tombs of Beni-Hassan, which consist of chambers hewn in the solid rock, with columned porticoes of primitive character on the exterior, yet with details somewhat developed.

The Hyksos.—About the year 2100 B. C. certain Asiatic tribes known as the Hyksos overran Egypt, and during their domination, which lasted several centuries, they annihilated the ancient native culture or compelled it to take refuge in isolated spots, whence, under the eighteenth dynasty, about 1600 B. C., the Egyptians issued to undertake the liberation of their country—a task which was completed, after a protracted struggle, about the middle of the fifteenth century B. C. Even during the wars of liberation the restoration of the ancient sanctuaries was commenced, and the revived kingdom soon entered upon a new period of advanced culture.

Monuments of Thebes.—The city of Ammon—Thebes, in Upper Egypt—became the seat of government, and here arose the most splendid monuments. The buildings and sanctuaries erected during this period are the expression of a strong and living national spirit. King after king, generation after generation, rivalled one another in the erection, decoration, and enlargement of these structures. The private buildings have disappeared;

¹ The French, during their occupation of Egypt (1798–1802), removed the sand in which the Sphinx was buried up to the neck, and discovered that, with the exception of the fore-paws, which are of brick, the figure was carved out of the natural rock on which it rests. Between the paws there was a small sanctuary or temple. The shifting sands of the desert soon again covered the figure. Its re-exhumation is now in progress. It is so far laid bare that there has been found starting from between the paws a passage whose entrance, covered by a large stone, is supposed to lead to the interior of the Great Pyramid.—ED.

the great irrigation-works, the canals, the fish-ponds, the embankments, the streets, and other monuments, had no definite artistic form. It is in the remains of the royal palace, in the temples, and in the tombs that the style of the age is shown and since they are the most idealistic expression, reaches its highest development.

Egyptian Temples.—The plan and size of the temples differ according to the needs of worship. A characteristic feature of the plan is the propylon consisting of two broad pyramidal towers, wider than deep, between which passes a mighty portal. Upon the towers stand masts, which once had banners at their summits: in front of the towers are attached colossal figures, and in front of these are slender obelisks, while rows of sculptured lions, griffins and sphinxes form the approach. Behind the propylon is a fore-court surrounded by a single or double portico. Then follows the sanctuary, consisting of many communicating chambers, for the most part without windows, their ceilings being partly supported by columns (*pl. 1, figs. 6-7; pl. 2, figs. 2, 3*). In the largest temples several fore-courts with pylons follow one another, and around the sanctuary are other courts, behind which other sanctuaries are sometimes built. The columns consist of colossal blocks of stone, while the capitals are variously designed, having sometimes the form of a closed flower-calyx, and sometimes that of an open one (*pl. 2, figs. 5-11*).

Immense lintels of stone carried on low four-sided, prismatic imposts stretch from column to column, while huge stone slabs form the roof, and also outwardly a platform reached by steps. All the outer walls are narrowed upward: their angles are marked by a roll-moulding, and a great curve forms the cornice (*fig. 12*). The blocks of which this cornice is built and which lie upon the roof-slabs, form a parapet for the upper platform. All the walls, the surfaces of the columns, the architrave and cornice within and without, are adorned with paintings and painted bas-reliefs, in some of which the round of symbolism and mythology, in others history, and in others the public, private, and industrial life of the nation, are depicted in rich yet severe outline. The paintings and sculpture, together with the connecting decoration and hieroglyphics, form an exceedingly vivid ornamentation, which, however, does not in the least alter the character of the surfaces it covers (*pl. 1, figs. 8, 9, 11; pl. 2, figs. 2, 3*).

Culmination of Egyptian Culture.—Egyptian culture culminated at the end of the eighteenth dynasty and the beginning of the nineteenth, when King Seti I. and his son, the great Rameses II., reigned and (about 1500 B. C. extended their victorious arms over Ethiopia, Syria, Asia Minor, Mesopotamia, and, according to tradition, even to the Ganges, Scythia, and Thrace: so that the treasures of the world flowed to Egypt as tribute. A great part of the principal sanctuary at Thebes, the imperial temple, not far from which stands the present village of Karnak, dates from their reigns.

Great Temple at Karnak.—This temple had already a double pair of

pylons, in front of the first pair of which these kings built a columned hall 100 metres (328 feet) in width by 50 metres (164 feet) in depth. Twelve gigantic columns 20 metres (nearly 66 feet) in height and 3 metres (nearly 10 feet) in diameter form a central avenue, and on each side sixty-one columns each 12 metres (nearly 40 feet) high support the roof of the lower lateral portions of the hall. The central and higher portion has upper windows, like the clere-storey of a Gothic cathedral. The lintels are 7 metres (23 feet) long, $1\frac{1}{2}$ metres (nearly 5 feet) wide, and nearly 2 metres ($6\frac{1}{2}$ feet) thick; a pair of them together form an architrave. The roof-slabs which rest on these are $8\frac{1}{2}$ metres (nearly 28 feet) long and more than a metre ($3\frac{1}{2}$ feet) in breadth and thickness. Thus immense blocks of stone have here been lifted to a considerable height. Figures 6 and 7 (*pl.* 2) show the closed lotus-capitals of the lateral portions, while Figure 9 shows the open-calyx capitals of the central series. In front of the columned hall is a fore-court with porticoes on each side, while a central open-pillared avenue leads up to the entrance. Another pair of pylons, to which a double row of sphinxes conducts, completes the new structures. The entire temple has a length of 320 metres (1049½ feet).

Rameses II. added a new fore-court with pylons to the temple near the present Luxor, and in front of it two colossal figures and two obelisks each 24 metres (about 79 feet) high. One of the latter is still in place, while the other has been carried to Paris to decorate the Place de la Concorde. Another obelisk, which Rameses II. erected at Heliopolis, now stands in the Piazza del Popolo at Rome.¹

The Rock-temples of Nubia, especially the two at Ipsamboul, belong to the reign of Rameses II. The larger is represented on Plate I. (*figs.* 3-5). Not only are the various halls hewn out of the solid rock, but also the façade itself, which consists essentially of four colossal sitting statues 19 metres (62 feet) high, representing Rameses himself. Smaller but still colossal figures, representing members of his family, stand between the feet of these giants. The inner hall has eight square columns, against which are attached standing figures 10 metres (nearly 33 feet) in height. Wherever Rameses led his victorious hosts he erected triumphal columns and other memorials, some of which still exist.

Decadence of Egyptian Art.—Shishak, a king of the twenty-second dynasty, conquered Jerusalem in the year 970 B. C., carried off the treasures of the temple of Jehovah, and immortalized his deeds upon the southern wall of the temple at Karnak; yet about a hundred years later Egypt fell into the hands of the Ethiopians, whose king, however, ruled

¹ Among the best known of ancient relics are the two obelisks commonly called "Cleopatra's Needles." They were originally brought from Heliopolis to Alexandria during the Roman rule, and were set up in front of the Temple of Cæsar. Subsequently one of them fell, and lay prostrate for centuries, until, in 1878, it was taken to London and placed on the Thames Embankment. The other remained in position until 1880, when it was conveyed to the United States and erected in Central Park, New York City. Its full length is 69 feet 2 inches. At the base, just above the broken portion, the stone is $92\frac{3}{4}$ inches thick, and at the top, at the edge of the pyramidion, it is 63 inches thick. The one in London is of about the same dimensions, though not quite so long.—Ed.

according to the ancient régime, since the Ethiopians themselves had previously adopted Egyptian culture. This foreign domination, which also left behind some monuments, did not last a century. After its fall twelve princes ruled the separate provinces as independent lords, but formed a federation and built as their sanctuary the celebrated Labyrinth.¹

Psammetichus, one of these rulers, about 670 B. C. overpowered the others and again established the unity of the kingdom; he fixed his residence at Sais. During the twenty-sixth dynasty, that of the Psammetichi, which lasted about a hundred years, Egypt enjoyed a new period of prosperity.

Egypt under Persian Rule.—Amasis also, the founder of the twenty-seventh dynasty, sought by splendid monuments to glorify his reign; but soon afterward, under his son Psamenit, Egypt was conquered (525 B. C.) by Cambyses, king of Persia, who in his passage destroyed all that it was possible to overthrow of the monuments of the land. Having broken the Egyptian power, he sought to annihilate Egyptian culture, but it withstood the shock, and the conqueror's successors celebrated their rule over Egypt, as the Ethiopians had done before them, by erecting Egyptian national monuments. With short intermissions during the rule of several national kings, the last of whom, Nectanebes, who reigned 363–350 B. C., made it his chief aim to restore the national sanctuaries, the Persian rule lasted until Alexander the Great overthrew the Persian power and became master of Egypt.

Egypt under Greek and Roman Rule.—The Ptolemies, Greek princes, adhered to Hellenic customs; under them Alexandria reached its greatest prosperity, but they, as well as their successors the Romans, allowed Egyptian culture to exist. Even under the world-wide domination of Rome, as late as the third century A. D., Egyptian culture had sufficient vitality to remain true to itself, and to raise monuments which essentially retain the ancient character. To this era belong the monuments of Philæ, Edfû (*pl.* 2, *fig.* 2), Esneh, Denderah, etc., all of which show foreign influence in many unimportant details. Especially characteristic of this late date are capitals with four human heads (*fig.* 10), unusually high imposts upon the columns (*fig.* 1), partition-walls between the lower halves of the columns (*figs.* 1, 2, 4), the arrangement of door-jambs without a lintel, but attached to columns (*figs.* 1, 2, 4), and richly-decorated forms of capitals (*figs.* 1, 11).

¹ This wonderful building occupied three sides of an open quadrangle about 200 yards square in the middle; the fourth side was nearly closed by a pyramid which was 243 feet high. The entire structure was divided by twelve contiguous halls or courts, each of which was vaulted and had twelve chambers, six opening to the north and six to the south. The edifice contained three thousand chambers, fifteen hundred of which were underground. The roofs and walls of the chambers were incrustated with marble and adorned with sculptured figures; the halls were surrounded with stately pillars of white marble. It was the underground chambers which Herodotus inspected, and which filled him with such amazement that he found words inadequate to describe what he witnessed. The opening of the doors was attended with such terrible noise that he compared it to peals of thunder. He was not permitted to inspect the lower series of chambers, as they contained the mummies of the holy crocodiles and of the kings. The Labyrinth was situated at Arsinoë, near Lake Meris.—ED.

Character of Egyptian Architecture.—That which gives Egyptian architecture even in these late times its peculiar character is its expression of calm, solemn, majestic grandeur, which does not in the least depend upon dimensions, but resides most fully and characteristically in that innate harmony of simple lines which is the outward expression of an unutterably steadfast, self-reliant, well-balanced spirit. It is through their complete concordance with their natural environment—the clear sky, the broad lines of the landscape, the warm light of the atmosphere—that these monuments appear as if they were spiritualized creations of Nature, yet greater than Nature's creations, since they manifest the full grandeur of human genius. Though every part—each sphinx, each obelisk, each columned hall—is independent, yet each forms a part of one grand whole. The spirit of the Egyptian people speaks out in them in all its fulness, just as it found expression in the life of the commonwealth, in which each individual was a fixed part of a mighty and powerful whole. Each was assigned a definite and unalterable duty in the entire organism, of which he felt himself a part and in the prosperity of which he took a share. As stone on stone makes a massive structure which defies the centuries, so, bound together by implicit faith, does man combine with man to fulfil the great designs of the State, whether as a warrior to enlarge its boundaries, or as a peaceful worker—one among thousands who are animated by the same spirit—to raise up mighty monuments to be the pride of the entire community.

Conclusion.—Through the medium of the narratives of the Old Testament we are made acquainted in our earliest youth with the ancient wonderland of the Pharaohs, with which we inseparably connect the idea of servitude. When we read how "the Egyptians made the children of Israel to serve with rigor, and made their lives bitter with hard bondage, in mortar, and in brick," the mighty monuments of the Egyptian kings seem to us the product of despotism, erected to gratify the caprice of an individual by means of the labor of an entire people. But we must not forget that no greater contrast can be imagined than that which existed between the Egyptians and the Israelites. The former were a sedentary people who had doubtless resided in one place thousands of years; this is evidenced by the greatly-developed scale of their arts and industries, whose earliest known examples are of a kind which shows that they must have been based upon an extended course of development. Out of this protracted growth was evolved every element of that culture which we see historically demonstrated to have endured without alteration through long periods of time.

The Egyptians possessed a state-life, and each individual was assigned a place in which he felt himself to be a part of the great whole, without even a thought that there could arise the possibility of a change of condition. How could the Israelites—a people whose ever-recurrent propensity for wandering brought them into the land perhaps by accident—share in this life in which all individuality was merged in the state? Does it not

it is not hampered by constructive limitations and does not add more material, but serves solely the æsthetic idea which determined the arrangement of the masses and the methods of construction and guided the proportionment of the members.

Ornamentation also belongs to the language of form, and its shapes can have no relation to the structures of Nature, since speech and the formulating of particular ideas are not Nature's aim. What we consider the ornaments of a plant, as the flowers and leaves, are so only to our eyes, but in reality are as necessary to the life of the plant as are the stalk and the roots. They express no æsthetic ideas save such as are subjectively created in the human mind. Of course a perfectly useless ornament is out of place even in an architectural structure; the question as to its presence is analogous to that regarding the flowers and leaves of the plant. The character and ideal purpose of the edifice must determine the quantity and position of the ornamentation, and in a perfect structure the quantity must be neither too great nor too small. Its usefulness or uselessness does not depend on the material aspect of the work, which is here less important, but always on the ideal. Nature has given creative power to man alone, and therefore art, which is a portion of the divine fire reflected in man, is purely human.

Decorative Forms.—If all parts which fulfil constructive needs express those needs by strongly-marked geometrical forms, and if these constructive forms may be less massive when the parts have less to support or to hold, it follows that the purely-decorative forms of ornamentation may follow at will all the forms that the human intellect can grasp, that the eye can see or the mind imagine. It can choose intricate geometrical combinations or derive its forms from the vegetable or animal kingdoms, even including that highest of animal forms, the human body. Even imaginary animal and vegetable forms have a right to be represented. All possible objects of surrounding existence—tools and weapons, books and instruments, even the mountains and valleys with their trees and buildings—furnish material for ornamentation; yet all this must be arranged in accordance with the spirit expressed in the edifice.

The one external consideration by which decoration is limited is the material of which it is formed, and to the nature of which it must give full expression. In doing this it becomes inseparable from the building—not a merely accidental extraneous part of it, but a part of the essence which, with the body of the work, constitutes the art-creation. This consideration of the nature of the material necessitates the more or less extensive changes which have to be made in the original conception in order to make it conform to the given style. In ornamentation, as in proportion, there are most marked differences between the language of forms of different nations. Upon the range of their fancy, itself dependent upon their grade of culture, depend the number of their conceptions and the kind and grade of their style.

Color in Architecture.—Our attention has thus far been occupied with

the creation of form, but form never appears unaccompanied by color, and this latter element perhaps impresses the mind of the spectator even more than form. Thus Architecture has to deal not only with form, but also with color, which has especial influence in the more ideal part of the problem. In the choice of materials attention must be paid not only to their constructive suitability, but also to their harmony of color. When the choice of materials is not free and their colors do not harmonize with the general character of the building, the care bestowed upon construction and proportion must be doubled, so that the inharmonious character of the materials may be overcome, or, at least, diminished.

One of the chief problems in the choice of constructive materials is so to arrange them that their tints may be in harmonious relation with the idea of the building. Color also influences the constructive detail, since the shadows cast by bright materials are in stronger contrast than those cast by dark ones, and those cast by delicate tints contrast more strongly than those cast by deep ones; so that proportions do not appear of equal mass for all colors. It often occurs that, color excepted, all the other qualities of the materials are perfect.

As the raw material needs much preparation and must be brought into artistic form before it is capable of architectonic expression, so also the natural coloration is not always adapted to the representation of an architectural idea, and we must use an artificial scheme of coloration which can be applied locally to individual parts in order to give proportion, just as variety gives form. The effects of proportion given to the members of a building by colors, though they speak out sharply, are limited in their range; yet it is possible by means of color to denote the difference between heavy and light, supporting and supported structures—to tone down a rough form or to detach from one another forms which are not sufficiently distinct.

The principal use of color is, however, to bring out the decoration. Surfaces may be relieved by a rich play of colors without actual relief, and ideas may be with facility expressed by colors when the object they embellish calls for the widest possible range of imagination and fancy. Still, color has its own province, and to a certain extent its own series of forms, and must therefore be treated in its own manner. A harmonious interplay of colors, with correct proportion in the distribution of each, is characteristic of a fine work of art. In a truly artistic period color has never made use of artificial shadows to bring out artificial reliefs and depths, nor has it in any way been employed as a makeshift for form.

Conclusion.—We must content ourselves with the foregoing outline of the theory of Architectonics. As to the practice which is based on it—that is, the methods of solving according to its rules each individual problem, of proceeding rationally in the arrangement of every kind of building, of constructing various parts, as walls, windows, doors, halls, pillars, etc.—we can the less consider it in this connection, inasmuch as no theory of the development can be traced in the history of art. We mentioned

above that the laws of Nature often oppose one another, and that, as a clear result of a single one does not thus appear, forms are produced which the eye does not recognize as normal, but as freaks of Nature.

We find also in the history of art that the rational theory does not always dominate, but that, as in culture itself, all kinds of influences which may be external and unavoidable or may arise from deficient perception or false guidance make themselves felt. We have dwelt particularly on man's imperfect conception of the general laws of artistic creation and of his misunderstanding of their application to a particular case, and this forms an almost fundamental law the operation of which prevents the untrammelled exercise of the ideal laws of Architecture. This does not result entirely from the individuality of the creative artists, but partly from the degree of culture possessed by the entire nation; and so by the side of the authority of theory appears the influence of tradition, which operates even more powerfully and has in a most conspicuous manner impressed itself upon the history of Art. The influence of tradition as it grew up with the nations has contributed more to the diversity of architectural styles than have the external necessities of climate. But all this can be dealt with only in a historical manner, and we shall therefore, when we treat of individual styles, make it our especial duty to discover how far the theories traced above have made themselves felt at all periods and in various climes.

PART I.

ANCIENT ARCHITECTURE.

THOUGH the most primitive peoples possessed mental powers which greatly surpassed those of the brute creation, we meet with nothing that can properly be called Architecture until a higher culture developed higher aims. But the development of this civilization did not progress simultaneously over all the habitable world: not everywhere was a substratum ready on which to build; and, though we may speak of the culture of races which accomplished these results thousands of years before our era, and possess magnificent monuments executed by them, other races have not as yet passed beyond the beginnings of civilization.

I. THE EGYPTIANS.

Probably the oldest monuments of Architecture are those transmitted to us by that wonderful race which dwelt on the north-eastern coast of Africa more than four thousand years ago, and which not only attained considerable political importance, but also left to the world a civilization which has served as a basis for the culture of all succeeding ages. The history of Egypt reaches into the remotest antiquity, and as far as we can trace it back it is that of a civilized nation. On the threshold of this history stands Mena, or Menes, who, coming down from Thinis (or This; in Egyptian, Teni), in Upper Egypt, nearly three thousand years B. C., built Memphis, his capital, adorned it with temples and palaces, and constructed immense embankments and extensive irrigation-works which fitted the land for cultivation. Granting that we have no remains positively proved to be his, still the pyramids overlooking the Nile near Memphis undoubtedly date from about three thousand years before Christ.

There are two prime motives which lead man beyond the most rudimentary civilization. The first is that dawning recognition of the power, grandeur, and eternal order of the universe which draws him to the Divinity and leads him to adore and love Deity as the fountain-head of the whole order of nature as well as the Ruler and providential Guide of his own individual fate. The second is the consciousness that the soul of man—that transformed Godhead which in life was clothed with a body, and which, like an image of the Godhead, is conspicuous here by its great deeds—has even after death a claim to reverence, since future generations owe much to the great of the past. While, therefore, man consecrates

temples and altars to the Divinity, he raises funeral piles to receive the bodies of the dead and erects monuments to their memory.

The wonderful fertility of Egypt, dependent on the annual inundation of the Nile—a phenomenon so regular that it could be calculated by the study of the stars—was likely to lead its inhabitants to a recognition of the forces and the masterly order of nature, compared with which man is so small and powerless. The conception of the uncertainty and brevity of life and of the immortality of the soul was deeply impressed on the character of the people and influenced all their ideas. Consequently, an intense and overpowering solemnity, a grand and reverential dignity, shine forth in all their representative arts.

The Priesthood.—The nation itself was divided into distinct classes, each of which had its definite part to perform. One class was in possession of all the knowledge and all the ability, and its duty was to direct the other castes and to determine their tasks. This class, as the most cultured, as the repository of all the intelligence of the nation, stood nearest to the Divinity, and formed a priesthood whose duty it was to offer sacrifices, to instruct the people, and to lead them to the Divinity through godliness. The insignificance and brevity of human life, as contrasted with the unchangeable grandeur of nature, induced the conviction that eventually the soul would return to reinhabit its earthly tenement, and led to a burial-ceremony whose chief aim was to preserve the body properly until the time when it should again assume the rank its owner held in life. (See Vol. II., p. 135.)

The Pyramids, the most venerable piles of monumental architecture known to us, are the sepulchres of kings, the sanctuaries of the dead. About forty of these structures, of different sizes, situated in groups, cluster around the "three giant pyramids" and stretch from them in two directions, northward to Abu-Roash, and southward as far as the Fayoum. Between them have sprung up villages which furnish names for these groups. The pyramids rise at angles of a little more than forty-five degrees, and are constructed partly of brick and partly of large blocks of stone, some of which latter are 6 metres (19½ feet) in length. The largest—commonly called the "Great Pyramid" (*pl. 1, figs. 1, 2*)—has a base of 250 metres (820 feet) and is 150 metres (492 feet) in height.¹

These, the most colossal sepulchral monuments in the world, exhibit more resemblance to those masses of material which compose the funeral mounds of other nations than to regularly-constructed buildings. They are monuments of primitive culture, but of a culture that possessed ample means and extensive appliances, and they indicate a highly-organized state and a strong central government to which everything was subser-

¹ The original vertical height of the "Great Pyramid" is variously estimated: by Vyse and Perring, at 480½ feet; by Fergusson, at 484 feet; and by Piazza Smyth, at 485 feet. The length of each side, according to Vyse and Perring, was 764 feet, and according to Fergusson 760 feet. The present height is about 20 feet less than the original height, and the length of each side has been diminished about 18 feet. Many of the basement-stones are 30 feet in length and nearly 5 feet high.—ED.

vient. As they now appear, partly buried by the sands of the desert and stripped of their smooth-coated granite plates, with the deep-blue sky overhead, they create an impression stronger than that evoked by the solid hills. Moreover, it appears that they grew to their present size by degrees: a small pyramid formed a nucleus, and over this were laid successive coats of material.

Connected with the pyramids which contain only small funeral chambers in their nucleus are other structures which exhibit architectonic development and serve to prove that these stupendous masses are in their simplicity a relic of still earlier times. Other tombs, of smaller dimensions, are scattered among these gigantic achievements of Architecture. There is thus presented the appearance of a burial-ground upon a large scale grouped around the pyramids.

The Sphinx.—The head of a colossal sphinx rises from the desert near the Pyramid of Gizeh and indicates a figure 25 metres (82 feet) high and more than 40 metres (131 feet) long (*pl. 1, fig. 2*).¹

Egyptian Dynasties.—The history of Egypt is reckoned by the dynasties that ruled over the country. The pyramids belong to the period of the earliest dynasties—the largest of them, to the fourth. They may be regarded as the works of the first bloom of Egyptian culture. A second flourishing period may be distinguished at the end of the third thousand years before Christ, in the time of the twelfth dynasty. From this age date the rock-tombs of Beni-Hassan, which consist of chambers hewn in the solid rock, with columned porticoes of primitive character on the exterior, yet with details somewhat developed.

The Hyksos.—About the year 2100 B. C. certain Asiatic tribes known as the Hyksos overran Egypt, and during their domination, which lasted several centuries, they annihilated the ancient native culture or compelled it to take refuge in isolated spots, whence, under the eighteenth dynasty, about 1600 B. C., the Egyptians issued to undertake the liberation of their country—a task which was completed, after a protracted struggle, about the middle of the fifteenth century B. C. Even during the wars of liberation the restoration of the ancient sanctuaries was commenced, and the revived kingdom soon entered upon a new period of advanced culture.

Monuments of Thebes.—The city of Ammon—Thebes, in Upper Egypt—became the seat of government, and here arose the most splendid monuments. The buildings and sanctuaries erected during this period are the expression of a strong and living national spirit. King after king, generation after generation, rivalled one another in the erection, decoration, and enlargement of these structures. The private buildings have disappeared;

¹ The French, during their occupation of Egypt (1798–1802), removed the sand in which the Sphinx was buried up to the neck, and discovered that, with the exception of the fore-paws, which are of brick, the figure was carved out of the natural rock on which it rests. Between the paws there was a small sanctuary or temple. The shifting sands of the desert soon again covered the figure. Its re-exhumation is now in progress. It is so far laid bare that there has been found starting from between the paws a passage whose entrance, covered by a large stone, is supposed to lead to the interior of the Great Pyramid.—ED.

the great irrigation-works, the canals, the fish-ponds, the embankments, the streets, and other conveniences, had no definite artistic form. It is in the remains of the royal palace, in the temples, and in the tombs that the style of the age is shown and, since they are the most idealistic expression, reaches its highest development.

Egyptian Temples.—The plan and size of the temples differ according to the needs of worship. A characteristic feature of the plan is the propylon, consisting of two broad pyramidal towers, wider than deep, between which yawns a mighty portal. Upon the towers stand masts, which once had banners at their summits; in front of the towers are attached colossal figures, and in front of these are slender obelisks, while rows of sculptured lions, rams, and sphinxes form the approach. Behind the propylon is a fore-court surrounded by a single or double portico. Then follows the sanctuary, consisting of many communicating chambers, for the most part without windows, their ceilings being partly supported by columns (*pl. 1, figs. 6, 7; pl. 2, figs. 2, 3*). In the largest temples several fore-courts with pylons follow one another, and around the sanctuary are other courts, behind which other sanctuaries are sometimes built. The columns consist of colossal blocks of stone, while the capitals are variously designed, having sometimes the form of a closed flower-calyx, and sometimes that of an open one (*pl. 2, figs. 5-11*).

Immense lintels of stone carried on low four-sided, prismatic imposts stretch from column to column, while huge stone slabs form the roof, and also outwardly a platform reached by steps. All the outer walls are narrowed upward; their angles are marked by a roll-moulding, and a great cove forms the cornice (*fig. 12*). The blocks of which this cornice is built, and which lie upon the roof-slabs, form a parapet for the upper platform. All the walls, the surfaces of the columns, the architrave and cornice within and without, are adorned with paintings and painted bas-reliefs, in some of which the round of symbolism and mythology, in others history, and in others the public, private, and industrial life of the nation, are depicted in rich yet severe outline. The paintings and sculpture, together with the connecting decoration and hieroglyphics, form an exceedingly vivid ornamentation, which, however, does not in the least alter the character of the surfaces it covers (*pl. 1, figs. 8, 9, 11; pl. 2, figs. 2, 3*).

Culmination of Egyptian Culture.—Egyptian culture culminated at the end of the eighteenth dynasty and the beginning of the nineteenth, when King Seti I. and his son, the great Rameses II., reigned and (about 1400 B. C.) extended their victorious arms over Ethiopia, Syria, Asia Minor, Mesopotamia, and, according to tradition, even to the Ganges, Scythia, and Thrace; so that the treasures of the world flowed to Egypt as tribute. A great part of the principal sanctuary at Thebes, the imperial temple, not far from which stands the present village of Karnak, dates from their reigns.

Great Temple at Karnak.—This temple had already a double pair of

pylons, in front of the first pair of which these kings built a columned hall 100 metres (328 feet) in width by 50 metres (164 feet) in depth. Twelve gigantic columns 20 metres (nearly 66 feet) in height and 3 metres (nearly 10 feet) in diameter form a central avenue, and on each side sixty-one columns each 12 metres (nearly 40 feet) high support the roof of the lower lateral portions of the hall. The central and higher portion has upper windows, like the clere-storey of a Gothic cathedral. The lintels are 7 metres (23 feet) long, $1\frac{1}{2}$ metres (nearly 5 feet) wide, and nearly 2 metres ($6\frac{1}{2}$ feet) thick; a pair of them together form an architrave. The roof-slabs which rest on these are $8\frac{1}{2}$ metres (nearly 28 feet) long and more than a metre ($3\frac{1}{3}$ feet) in breadth and thickness. Thus immense blocks of stone have here been lifted to a considerable height. Figures 6 and 7 (*pl.* 2) show the closed lotus-capitals of the lateral portions, while Figure 9 shows the open-calyx capitals of the central series. In front of the columned hall is a fore-court with porticoes on each side, while a central open-pillared avenue leads up to the entrance. Another pair of pylons, to which a double row of sphinxes conducts, completes the new structures. The entire temple has a length of 320 metres ($1049\frac{1}{2}$ feet).

Rameses II. added a new fore-court with pylons to the temple near the present Luxor, and in front of it two colossal figures and two obelisks each 24 metres (about 79 feet) high. One of the latter is still in place, while the other has been carried to Paris to decorate the Place de la Concorde. Another obelisk, which Rameses II. erected at Heliopolis, now stands in the Piazza del Popolo at Rome.¹

The Rock-temples of Nubia, especially the two at Ipsamboul, belong to the reign of Rameses II. The larger is represented on Plate I. (*figs.* 3-5). Not only are the various halls hewn out of the solid rock, but also the façade itself, which consists essentially of four colossal sitting statues 19 metres (62 feet) high, representing Rameses himself. Smaller but still colossal figures, representing members of his family, stand between the feet of these giants. The inner hall has eight square columns, against which are attached standing figures 10 metres (nearly 33 feet) in height. Wherever Rameses led his victorious hosts he erected triumphal columns and other memorials, some of which still exist.

Decadence of Egyptian Art.—Shishak, a king of the twenty-second dynasty, conquered Jerusalem in the year 970 B. C., carried off the treasures of the temple of Jehovah, and immortalized his deeds upon the southern wall of the temple at Karnak; yet about a hundred years later Egypt fell into the hands of the Ethiopians, whose king, however, ruled

¹ Among the best known of ancient relics are the two obelisks commonly called "Cleopatra's Needles." They were originally brought from Heliopolis to Alexandria during the Roman rule, and were set up in front of the Temple of Cæsar. Subsequently one of them fell, and lay prostrate for centuries, until, in 1878, it was taken to London and placed on the Thames Embankment. The other remained in position until 1880, when it was conveyed to the United States and erected in Central Park, New York City. Its full length is 69 feet 2 inches. At the base, just above the broken portion, the stone is $92\frac{3}{4}$ inches thick, and at the top, at the edge of the pyramidion, it is 63 inches thick. The one in London is of about the same dimensions, though not quite so long.—ED.

according to the ancient régime, since the Ethiopians themselves had previously adopted Egyptian culture. This foreign domination, which also left behind some monuments, did not last a century. After its fall twelve princes ruled the separate provinces as independent lords, but formed a federation and built as their sanctuary the celebrated Labyrinth.¹

Psammetichus, one of these rulers, about 670 B. C. overpowered the others and again established the unity of the kingdom; he fixed his residence at Sais. During the twenty-sixth dynasty, that of the Psammetichi, which lasted about a hundred years, Egypt enjoyed a new period of prosperity.

Egypt under Persian Rule.—Amasis also, the founder of the twenty-seventh dynasty, sought by splendid monuments to glorify his reign; but soon afterward, under his son Psamenit, Egypt was conquered (525 B. C.) by Cambyses, king of Persia, who in his passage destroyed all that it was possible to overthrow of the monuments of the land. Having broken the Egyptian power, he sought to annihilate Egyptian culture, but it withstood the shock, and the conqueror's successors celebrated their rule over Egypt, as the Ethiopians had done before them, by erecting Egyptian national monuments. With short intermissions during the rule of several national kings, the last of whom, Nectanebes, who reigned 363–350 B. C., made it his chief aim to restore the national sanctuaries, the Persian rule lasted until Alexander the Great overthrew the Persian power and became master of Egypt.

Egypt under Greek and Roman Rule.—The Ptolemies, Greek princes, adhered to Hellenic customs; under them Alexandria reached its greatest prosperity, but they, as well as their successors the Romans, allowed Egyptian culture to exist. Even under the world-wide domination of Rome, as late as the third century A. D., Egyptian culture had sufficient vitality to remain true to itself, and to raise monuments which essentially retain the ancient character. To this era belong the monuments of Philæ, Edfu (*pl. 2, fig. 2*), Esneh, Denderah, etc., all of which show foreign influence in many unimportant details. Especially characteristic of this late date are capitals with four human heads (*fig. 10*), unusually high imposts upon the columns (*fig. 1*), partition-walls between the lower halves of the columns (*figs. 1, 2, 4*), the arrangement of door-jambs without a lintel, but attached to columns (*figs. 1, 2, 4*), and richly-decorated forms of capitals (*figs. 1, 11*).

¹ This wonderful building occupied three sides of an open quadrangle about 200 yards square in the inside; the fourth side was nearly closed by a pyramid which was 243 feet high. The entire structure was divided by twelve contiguous halls or courts, each of which was vaulted and had twelve doors, six opening to the north and six to the south. The edifice contained three thousand chambers, fifteen hundred of which were under ground. The roofs and walls of the chambers were incrustated with marble and adorned with sculptured figures; the halls were surrounded with stately pillars of white marble. It was the above-ground chambers which Herodotus inspected, and which filled him with such amazement that he found words inadequate to describe what he witnessed. The opening of the doors was attended with such terrible noise that he compared it to peals of thunder. He was not permitted to inspect the lower series of chambers, as they contained the mummies of the holy crocodiles and of the kings. This labyrinth was situated at Arsinoë, near Lake Mœris.—Ed.

Character of Egyptian Architecture.—That which gives Egyptian architecture even in these late times its peculiar character is its expression of calm, solemn, majestic grandeur, which does not in the least depend upon dimensions, but resides most fully and characteristically in that innate harmony of simple lines which is the outward expression of an unutterably steadfast, self-reliant, well-balanced spirit. It is through their complete concordance with their natural environment—the clear sky, the broad lines of the landscape, the warm light of the atmosphere—that these monuments appear as if they were spiritualized creations of Nature, yet greater than Nature's creations, since they manifest the full grandeur of human genius. Though every part—each sphinx, each obelisk, each columned hall—is independent, yet each forms a part of one grand whole. The spirit of the Egyptian people speaks out in them in all its fulness, just as it found expression in the life of the commonwealth, in which each individual was a fixed part of a mighty and powerful whole. Each was assigned a definite and unalterable duty in the entire organism, of which he felt himself a part and in the prosperity of which he took a share. As stone on stone makes a massive structure which defies the centuries, so, bound together by implicit faith, does man combine with man to fulfil the great designs of the State, whether as a warrior to enlarge its boundaries, or as a peaceful worker—one among thousands who are animated by the same spirit—to raise up mighty monuments to be the pride of the entire community.

Conclusion.—Through the medium of the narratives of the Old Testament we are made acquainted in our earliest youth with the ancient wonderland of the Pharaohs, with which we inseparably connect the idea of servitude. When we read how "the Egyptians made the children of Israel to serve with rigor, and made their lives bitter with hard bondage, in mortar, and in brick," the mighty monuments of the Egyptian kings seem to us the product of despotism, erected to gratify the caprice of an individual by means of the labor of an entire people. But we must not forget that no greater contrast can be imagined than that which existed between the Egyptians and the Israelites. The former were a sedentary people who had doubtless resided in one place thousands of years; this is evidenced by the greatly-developed scale of their arts and industries, whose earliest known examples are of a kind which shows that they must have been based upon an extended course of development. Out of this protracted growth was evolved every element of that culture which we see historically demonstrated to have endured without alteration through long periods of time.

The Egyptians possessed a state-life, and each individual was assigned a place in which he felt himself to be a part of the great whole, without even a thought that there could arise the possibility of a change of condition. How could the Israelites—a people whose ever-recurrent propensity for wandering brought them into the land perhaps by accident—share in this life in which all individuality was merged in the state? Does it not

even seem that the Israelitish narratives make an oppression out of what was really a natural relation?

We may, therefore, dismiss the thought that caprice and arbitrary power coerced the masses of the people to the raising of these monuments, which only pride and thirst for fame could erect. These monumental piles are in reality the expression of the entire national character.

II. THE ASIATIC RACES.

The Aborigines.—The Old Testament makes us acquainted with the possessors of still another civilization, with a series of races of the same stock as the chosen people. The tenth chapter of Genesis mentions Nimrod as the great-grandson of the patriarch Noah: "He began to be a mighty one in the earth;" "And the beginning of his kingdom was Babel . . . in the land of Shinar;" "Out of that land went forth Asshur, and builded Nineveh, and the city Rehoboth, and Calah, and Resen between Nineveh and Calah: the same is a great city." The scene of this civilization is Mesopotamia, the plain of the Euphrates and the Tigris, a land constituted similarly to Egypt and similarly favored by nature—a land calculated to attract a nomadic race which desired to become stationary and civilized.

This land did not, indeed, furnish those mighty blocks of stone with which the Egyptians erected their monuments. The eleventh chapter of Genesis says, "And it came to pass, as they journeyed from the east, that they found a plain in the land of Shinar; and they dwelt there. And they said one to another, Go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar. And they said, Go to, let us build us a city, and a tower, whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth." And so they founded cities—some of which are mentioned in the Book of Genesis—generations before Abraham, Isaac, and Jacob appeared, and before the chosen people in their wanderings came to Egypt.

We can only vaguely guess at the aspect of the cities founded in that early time, as scarcely any of their remains now exist. Greek tradition names Nineveh or Ninus, a work of a king of the same name, as the oldest city; it tells of his immense constructions, and relates how his widow, Semiramis, founded Babylon and built the Temple of Belus, and it speaks of the enormous walls of the city, the great citadel, the reservoirs, and the hanging-gardens. We have, indeed, reason to believe that these extensive works—which Herodotos professes to have seen, and which the Greeks classed among the wonders of the world—did not belong to this early age, or, at least, were remodelled at a later time. The exact date is difficult to fix. The most recent investigations place the culmination of Chaldaean culture at about 2000–1500 B. C.; so these races probably became settled about 2100 B. C., or about the time when the Hyksos invaded Egypt and destroyed its ancient civilization. Without doubt the

Hyksos issued from this part of Asia, having been driven out by other tribes whose wanderings were connected with those of the Old-Testament patriarchs of whom the Book of Genesis gives us so vivid a picture.

The Mongolians and Assyrians.—Whether these peoples were all related, as may be inferred from the biblical narrative, or were of different stock, as ethnologists assert, the Assyrians being allied to the Mongolians and coming from Central Asia, is for the broader scope of architectural history of little importance. But the latter were probably the first of that inland group of tribes to become settled and to develop a stable civilization; without doubt they influenced the culture of the other tribes by the extent and importance of their rule—the more so as, with the exception of a single people, these continued in their nomadic life long afterward.

The Phœnicians.—About the same time that the Chaldæans settled in Mesopotamia, the Phœnicians, a people of Semitic origin, and one of the most restless races of antiquity, endowed with that versatility which, in conjunction with the impetus of an incessant chase after gain, induced other nomads to wander through the land, settled down upon the coast of Syria. These hardy sailors, who soon searched every coast from India to Britain, brought home the natural treasures of different countries and exchanged with their inhabitants the products of an extensive industrial activity. A series of colonies gave to this oldest world-wide commerce a steadfast organization. Ere long the Phœnicians had incorporated the collective artistic ability of all these peoples with that which was of home-growth. Their oldest and most important cities were Tyre and Sidon.

Primitive Type of Asiatic Architecture.—This remarkable people also undertook the erection of immense buildings. The traditions of these are more explicit than those we have concerning the buildings of the ancient days of Nineveh and Babylon. Though in some respects they probably deviated from their type, these structures clearly belong to a culture identical with that in which the Assyrians were dominant. Whichever of these races was the first to become settled, whichever earliest turned toward the arts and industries or longest sought for profit in the increase of its flocks and herds, the tent of the nomad furnished to all these wandering peoples the primitive type, as well for buildings devoted to ordinary uses as for fortifications and other classes of structures, even though for the lower portions of their temples and palaces the mightiest piles of squared stones were put together.

Technical Skill.—As the Phœnicians were versed in weaving, in colors, in glass-making, and, above all, in wood-cutting, bronze-working, and the goldsmith's craft, their constructive talent displayed itself chiefly in magnificent ornament and did not seek expression in that vast monumentalism for which the Egyptians were distinguished. Cedar lavishly employed, inlaid work of cypress, bronze pillars, gold-plating upon walls, ivory seats, and tapestry are what we find in Phœnician temples, as also in the sanctuary which the friendly Phœnicians erected for the Israelites when at

last the latter resolved to replace their wandering tabernacle by a permanent structure.

Monumental Remains.—All that is left to us of Phœnician magnificence, as well as of Jewish structures, is the remains of substructures, dams, and embankments, the huge square-hewn blocks of which seem to express even greater energy, and by their exactly smooth-hewn edges and often rough surfaces give still more the impression of power, than do the incised, polished, and sculpture-adorned walls of the Egyptians; but at the same time they yield nothing that can furnish a key to the artistic taste of their builders or to the cycle of forms used by them. What we glean from the biblical description suggests a lack of fixed principles rather than a prevalence of pure artistic genius. This is particularly apparent in Solomon's Temple, begun in 1015 B. C., as well as in his splendid palace, built in the Phœnician manner. The Bible tells us of the intimate connection between Jerusalem and the dominant Assyrians, and relates how the Israelites were carried captive to Nineveh and how their land was peopled by colonists of Assyrian stock.

Assyrian Architecture: Nineveh.—The prophet Jonah and Greek authorities both state that the circuit of Nineveh was three days' journey. The Greeks speak also of fifteen hundred towers built upon the city wall, which latter was so broad that on its summit three chariots could drive abreast. In recent times the immense mounds of débris that have been excavated reveal the entire arrangement of many palaces. Inscriptions which tell us of the builder and the date of the building, and numerous fragments which enable us to form a reproduction of at least some portions of the structure, have also been discovered. Whether those restorations, which have been attempted upon the basis of the exhumed fragments, are correct must ever remain somewhat doubtful, and even the guidance of the probably related palace of Solomon cannot prove to the practical artist with such clearness as to amount to certainty that we do not view a phantasm when we see the Jewish and Assyrian palaces in all their pristine magnificence displayed upon paper. The ground-plans are indicated with sufficient clearness: around several courts were grouped halls and smaller chambers, the living-rooms of the royal family, and the whole was surrounded by terraces.

Assyrian Royal Palaces.—The most remarkable of these palaces is that of Sargon, excavated near the village of Khorsabad. This palace possessed a grand terrace which was constructed of dried brick, and which was 14 metres (46 feet) high, 314 metres (1030 feet) broad, and 344 metres (1128 feet) long. It was bounded posteriorly by a wall 3 metres (nearly 10 feet) thick, lined with great limestone blocks, and provided with towers of defence, the whole appearing to be a continuation of the city wall. The building constructed on this platform comprises two hundred and ten halls, rooms, and chambers grouped around thirty-two courts. A great open staircase on one side and an inclined plane on the other lead up to the terrace. Twenty-six pairs of colossal human-headed winged bulls

wearing a priestly head-covering form portals through which access is gained to the courts and halls (*pl.* 3, *fig.* 8).

Many of the rooms were lined below with bas-reliefs and higher up with plaster. Recent investigators believe that the rooms were ceiled by tunnel-vaults, which, as well as the walls, were built of sun-dried bricks. Arches were sprung over the doors. The comparatively small rooms obtained light partly through the doors and partly through openings in the vaulting; the higher rooms, through a clere-storey immediately below the ceiling. Yet these clere-storeys, as we see them in relief among the representations upon the walls, give us an intimation that the larger halls had a wooden roof-covering. The climate permitted this roof to be used as a terrace, and it was surrounded by a parapet. Single rooms were occasionally roofed with a dome.

On the whole, it seems probable that the buildings on the terrace had but one storey, though certainly some portions were higher than others; yet the reliefs that we have obtained show, unless the poor perspective deceives us, buildings which consisted of many terraced storeys. In some palaces a steplike pyramid seven stages high rises from the terrace. Among the exterior decorations, besides reliefs, are the painting of the reliefs, wall-paintings, ornamental painted patterns, and a covering of glazed tiles.

The palace at Khorsabad stands in connection with a contemporaneous city the wall of which has a thickness of 24 metres ($78\frac{3}{4}$ feet), while its top corresponds with the terrace of the palace, of which it was a continuation; sixty-four towers rose above this wall, and it had seven gates, the three largest of which were adorned on the lower sides with winged bulls, while the arches appear to have been covered with colored glazed tiles.

Palaces at Nimrud.—The ancient Calah has been recognized in the ruins of Nimrud, where several palaces have been found. The north-western palace is proved by inscriptions to be the work of Assurnazirpal (923–899 B. C.), while the central palace is that of his son, Shalman-ezer V. (899–870). Sargon (721–702) built a palace and a dependent city, which was named Hisir-Sargon in his honor. His successor, Sennacherib (702–680), built the vast palace of Kouyúnjik, the remains of which are said to have been discovered in a huge mound near Mosul. The mounds at this spot are believed to mark the site of the ancient Nineveh. Assurbanipal (668–660) built the south-western palace of Nimrud.

Construction: Cupolas and Arches.—What may have been the mode of construction of the cupolas which were erected on these palaces—whether horizontal in ever-narrowing circles, or whether the blocks were formed into wedge-shaped *voussoirs*—cannot now be ascertained; but the presence of radiating *voussoirs* shows that the arch was used in the tunnel-vaults, in the crowns of the doors, and especially in the city gates. This is, therefore, the earliest known application of the arch. Elemental forms are preserved in the life of a people for thousands of years, and thus

the vaulted designs which under Græco-Roman influence were erected in the now-deserted cities of Central Syria can be traced back to these Assyrian vaults. These buildings differed in their construction from the then prevalent type emanating from Greece and Italy, just as the present Oriental structures differ from ours. Even now the East has its cupolas and terraced roofs, even now the tunnel-vault is indigenous there; timber-construction is lavishly applied in combination with more enduring materials, and glazed colored tiles play a prominent part in the decoration.

Materials.—From the information we have upon the subject we must conclude that wood was of very general application. We cannot doubt this when we see once-populous cities and magnificent palaces destroyed by fire, when we reflect that the tent of the nomad lay at the base of the entire architectural development of the East, and when in later phases of development of the same culture we meet with forms in stone which are but translations of those to which wood would naturally lend itself.

These splendid structures had but a short existence; the Assyrian kingdom soon fell. About 600 B. C., Nineveh was overthrown, never to be rebuilt; in a few hundred years not a vestige remained visible. The perishable material was destroyed; the more substantial was buried in the slime of the adobes, and tradition alone tells us that what seem natural mounds, which every year are decked with fresh green, were formerly the seat of a flourishing civilization.

Babylonian Art.—Babylon took the place of Nineveh. Originally an Assyrian province, it had repeatedly sought to gain its independence, and at last the Babylonians, under Nabopolassar, leagued with the Medes, destroyed Nineveh and put an end to the Assyrian monarchy, dividing its provinces between themselves.¹ Nebuchadnezzar, son of Nabopolassar and son-in-law of the King of the Medes, extended his kingdom even to Egypt. The Bible narrates how he destroyed Jerusalem and in the year 599 B. C. carried its people into captivity. He restored Babylon and caused vast edifices to be erected there; he rebuilt the Temple of Bel (Baal, Belus), and constructed the immense walls and the hanging-gardens attributed to Semiramis. To his time belong all the remains of buildings which have recently been unearthed.

The Temple of Bel rose in eight storeys of successively diminishing width, forming a terraced pyramid of about 200 metres (656 feet) at the base and of equal height, like those pyramidal structures which, serving either as tombs, like the Egyptian pyramids, or as sanctuaries or as astronomical observatories, towered above the Assyrian palaces in whose ruins their remains are now found. We may believe that we have here the sacred number *seven*, corresponding to that of the planets, each stage bearing its characteristic color, while the eighth, or lowest, is but the vast terrace upon which the principal structure rests. The uppermost stage bore the temple with golden statues, together with a couch and a golden

¹ Nabopolassar of Babylon made himself independent 625 B. C., and Nineveh was destroyed about 608 B. C.—ED.

table for the god. A wall formed the enclosure of the temple, which is also known as the Tomb of Belus.

Babylonian Remains.—Although among the huge mounds which mark the site of Babylon no remains of architectural value have as yet been found, we have reason to believe that the immense wall-masses of the terraced buildings which were constructed of sun-dried brick had a covering of mosaic like that of which fragments have been found in the ruins of Warka, where the façade is partly covered with a diaper pattern formed of small wedges of baked clay pressed into a layer of asphalt, and partly with what was once a varicolored coating of plaster. In these wall-decorations we behold a reminiscence of the rich tapestries for which Babylon was formerly famous; yet it is difficult at this time to obtain an approximately correct restoration of the architectural monuments of Babylon except as exemplified by Assyrian or by the later Persian models.

Walls and Palaces.—Herodotos speaks of a city wall which formed a square 120 stadia (14 miles) on each side, and was 50 royal cubits ($93\frac{1}{3}$ feet) wide and 200 cubits ($373\frac{1}{3}$ feet) high, and after examination of the Assyrian remains we have scarcely ground to doubt the correctness of the description. A hundred gates opened in this wall. A second wall, of less thickness than the first, but very little inferior to it in strength, enclosed an inner portion of the city, which was regularly laid out with streets crossing at right angles. The houses had three or four storeys. Among them were two royal palaces, the more ancient of which exceeded the newer in circuit. With it were connected those terraced hanging-gardens which rose to the height of the city wall and equalled it in breadth, and which Nebuchadnezzar built for his consort as a reminiscence of the mountains of her native Media. (See Vol. II. p. 147.)

Architectonic Features.—The impression produced by the Assyrian and Babylonian palaces must have been one of great magnificence. The arrangement of the parts gave them an extraordinary appearance. The material aim and the ideal significance of such a royal palace found fullest expression. Yet purely architectonic features are almost entirely wanting; the wall-masses are not built to express any particular idea, nor is the appearance of strength aided by a division into members. Scarcely a trace of a cornice exists. The columns which supported the roof were not of substantial materials; all that remains are colossal masses of walling decorated with reliefs and painting and once crowned with an elaborate structure of wood.

The walls themselves, devoid of proper architectonic expression, might be called monumental draperies. Where the decoration stands in nearest relation to the architectonic constructive parts, and where usually an architectural language of forms must be developed, as in the portals, this want is most conspicuous, and the fantastic decorations by no means compensate for the lack of rational forms. The bulls which bear the arches are not architectural features; they are not the correct expression of a part of the building which fulfils a thoroughly statical purpose.

Though the architectonic features, when compared with the Egyptian, are remarkably deficient in the appearance of rational construction, the ornamentation, which was trained in the excellent school of the textile arts, is pure, noble, and full of beautiful forms. Though somewhat stiff in the representation of figures, it succeeds well in the conventionalization of plant-forms, and in the arrangement as well as in the combination of geometrical patterns with severely conventional plant-like ornament it reaches its climax. As a proof of this we represent that often-recurring *motif*, the so-called "tree of life" (*pl.* 3, *fig.* 13).

The Fall of Babylon.—Babylon's prosperity was also short. First it became subject to the Medes, and then, about the middle of the sixth century B. C., the Persians issued from their mountain-fastnesses and overwhelmed alike Mede and Babylonian. Cyrus took Babylon about 536 B. C., Darius razed the walls, and Xerxes destroyed the Temple of Bel, which Alexander the Great failed to rebuild. Both city and neighborhood fell into decay, and Babylon, like the great Nineveh before it, soon passed from the memory of man. But the Medes, and after them the Persians, adopted the ancient culture and expressed it in their monuments.

Palace of Ecbatana.—The capital of greater Media was Ecbatana. According to the accounts which have come down to us, all the architectonic features of the palace were of cedar and cypress overlaid with gold and silver; even the roof was plated with these metals. It is also described as a pyramidal structure of seven stages, recalling the terraced buildings of Babylon. The battlements of the parapets were brilliant with gorgeous coloring. The uppermost buildings were entirely of wood.

Susa, also, lying east of the Tigris, in the level lowlands, was a kingly residence, and enclosed splendid structures, of which the Bible speaks in the Book of Esther.

Persian Architecture: Palace and Tomb of Cyrus.—The history of Persian architecture proper begins with Cyrus (559–529 B. C.). Of his palace at Pasargadæ there are extant some remains, consisting principally of an artificial terrace made of great blocks of squared stone resting against the cliffs. A smaller palace, near by, had a colonnade, of which a pillar 50 feet high exists. His tomb (*fig.* 3) is tolerably well preserved; it is a sarcophagus shaped like a house, and is situated on the summit of a terraced substructure, the whole about 12 metres (39 feet) in height. According to Greek tradition, a hall of twenty-four columns and a garden once surrounded the structure; broken shafts are all that is left of the hall. The interior of the tomb is 5 metres (16½ feet) broad by 6 metres (nearly 20 feet) long, and once enclosed a golden coffin, a golden couch, a table, chairs, swords, earrings with jewels, drinking-goblets, and an inscription which read, "Men! I am Cyrus, who led the Persians to power and ruled Asia. Grudge me not a grave." But even in the time of Alexander the treasures of the tomb were gone. A pillar in a building near by bears a bas-relief of the king himself.

Rock-tombs of Persepolis: Tomb of Darius.—The most important

group of monuments is that of Persepolis, where stood the Persian royal palace which Alexander in his drunken fury delivered to the flames. Not far from this city is the King's Mountain, in which are the tombs of the kings. These are not close together: two of them are in the marble-hill of Rahmed, while four others—among them an unfinished one—are about nine miles distant. The rock-face is hewn perpendicularly, and high up is a columned portico sculptured in relief, with a half-blind door placed between two of the columns. Above this is a superstructure richly decorated with floral ornament, and upon the summit is the king himself praying before a fire-altar. These tombs, of which we show that of Darius (*pl. 3, fig. 2*), are the most important monuments for guidance in the reconstruction of Persian architecture, since they alone remain intact to show what a Persian building was as a whole.

Royal Palaces at Persepolis.—Of the royal palace at Persepolis a series of ruins remains besides the great terraces upon which it was built. A double staircase of marble broad enough for ten horsemen to ride abreast leads to a terrace whereon stand massive piers against which rest the winged bulls with human heads whose acquaintance we have already made in Assyria (*p. 44*). Between these stand columns of slender proportions. This was the entrance, the propylæa, of the structure, attributed to Xerxes. A second gigantic staircase leads onward to a higher terrace, on which are situated great columned halls. Behind these halls is a structure which from the character of its reliefs seems to have served as a chamber for the reception of ambassadors, and farther back another, which may have been the dwelling-apartments.

The Persian kings inherited from their nomadic life the custom of changing their residence according to the season and the occasion, and, as Persepolis was the royal palace which stood nearest to the burial-place of the kings, it was set apart for royal celebrations of a solemn and imposing character. These grand staircases and terraces form, indeed, a majestic theatre for a pompous ceremonial. The present condition of the propylæa is shown in Figure 4, and in Figure 1 is Fergusson's restoration of the Great Hall of Xerxes, which we reproduce because he has adhered closely to the façades of the tombs.

Construction: Origin of Architectural Forms.—The slender columns with their fantastic capitals (*figs. 5-7*) show clearly their descent from the forms of wood-construction; and when we draw conclusions from other analogies between the earlier Assyrian and later Persian art, we can trace our way back to the older wooden structures which were everywhere built on the vast terraces. Wood-construction must have been of long standing, and undoubtedly was intimately connected with the national sentiment, since, with the slightest possible modifications, the endeavor was made to imitate it in stone. It can, however, scarcely have been indigenous with the Persians, but must, with other architectural peculiarities, have been the property of an entire group of people, and we prefer to believe that the Persians, whose civilization was acquired from the soil of

Mesopotamia and Chaldæa, also borrowed thence these wooden forms, rather than that we are in the presence of a construction in no wise related to the more ancient mode and yet possessed of a series of forms so closely related to it. In fact, we cannot fail to perceive the intimate relationship between the figures of bulls in the Assyrian and Persian portals and those on the capitals on Plate 3 (*figs.* 5, 7), and the relationship of both with those which bore the brazen laver in Solomon's Temple. We may suppose that in the older wooden buildings these double bulls were of metal, perhaps of cast bronze, the columns themselves being covered with beaten metallic plates. The volute as well as the entire portion of the columns shown in Figure 6 has no other origin than the curling shavings produced in working the wooden shafts.

The Portals of Persian architecture, however, bear witness to a development different from the Chaldæo-Assyrian. There we have an arch springing immediately over the bulls' heads, so that these beasts seem to bear the arch. Here the piers rise higher, so that the creatures are but a decoration applied to the lower part of the jambs. In a portal at Persepolis nearly 5 metres (16½ feet) wide and 14 metres (46 feet) high these beasts measure only 6 metres (nearly 19¾ feet) to the crown of the head. A huge lintel spans the opening, and a great Egyptian-like coved cornice finishes the architecture of the upper part of the doorway. The remains consist only of columns and door-jambs (*figs.* 11, 12).

The Walls.—The assumption that the walls—the massiveness of which is evident from the plan of the piers—were either of baked bricks, or, more probably, of sun-dried bricks whose friable material has been converted into earth, is more likely than that human hands have borne away huge blocks of stone. There is nothing to prove that windows occurred in the manner shown by Fergusson in his restoration (*fig.* 1.). It seems more probable that the light came through the clere-storey, of whose existence the superstructure of the hall carved in relief upon the royal tomb may give a hint, and also found entrance through the halls and doors of the courts. It is evident that the interiors of the rooms not only were resplendent with metallic plates and drapery, but were also clothed in rich colors. Even the exterior of the existing ruins shows everywhere traces of color.

Conclusion.—If we put together all that we certainly know concerning the architectural monuments of the various Asiatic peoples, we must see in them the works of one widespread common culture, even though there were notable differences of race between the peoples. Though of gigantic proportions, they lacked that expression of majestic solemnity, that undisturbed dignified repose, which characterizes Egyptian monuments. With all their size, they seem a fantastic play, and the tent of the nomad is perceptible even in the works of the latest period. Thence are derived the unsubstantial materials, the varied modes of application of unburnt brick, and the use of wood plated with metal.

The first and most ancient period of this architecture—we might

almost say of this civilization—was that of the Chaldæan Kingdom in the second thousand years B. C.; the second was that which developed among the Phœnicians previous to the year 1000 B. C.; the third, that of the Assyrian Kingdom from 1000 to 700 B. C.; the fourth, that of Babylonia and Media in the sixth century B. C.; and the last, that of Persia from the second half of the sixth century to the time of Alexander the Great, under whose successors Grecian culture replaced the indigenous civilization. Yet many elements outlasted the Greek domination, and many which are prevalent to-day go back to that early time. But Egyptian art may have had some influence upon the development of the native styles before the last period, and in that period, under the Persians, Hellenic art may have been influential.

III. THE PELASGIAN RACES.

In the preceding section we have sketched the art of a group of races. How far this art and the culture founded upon it were spread, under their sway, beyond the limits within which we have viewed them, we cannot ascertain with certainty; still less can we tell how widely their indirect influence may have made itself felt through peaceful and warlike relations with other nations. In general, we may assert that its proper territory was enclosed by the Persian Gulf and the Caspian, Black, and Mediterranean seas, although in the beginning it did not occupy the whole of that territory. We have seen that the Phœnicians organized a world-wide commerce along the seacoasts from India to Great Britain, and thus doubtless carried among foreign peoples the products of this magnificent Asiatic civilization. Certainly this would have its influence; yet historic data as to how far this influence extended are entirely wanting.

We now come in contact with a group of inter-related tribes of Indo-Germanic origin which are known by the common title of "Pelasgi." They settled in South-eastern Europe, descended to the Grecian peninsula, and spread over Asia Minor and Italy. It is not known when or by what route their migration occurred, but it may be presumed that it took place before the Asiatic peoples had attained their seats and their culture. We find them in Greece in the second thousand years before Christ, and to them very many of the Greek myths refer. In contrast to the great peoples of Asia who were united into vast empires, we find these peoples settled in small tribes, each perhaps the increase of a single family, while each had one of its oldest members at its head, similar to a patriarch of Asia in former times, but called a king. Instead of wandering like the patriarchal folk, they fixed their dwelling in a valley, upon a mountain, on some part of the seacoast, or upon an island. Their race-relationship formed an ideal bond, and they often united for common deeds or expeditions.

It matters little when Greek folk-lore had its origin, when it was brought into its present shape, or how much of it is due to a poetical

imagination; we always find the Pelasgian races erecting for themselves permanent houses, manufacturing their own weapons, building cities with solid walls, and constructing ships in which to seek treasures in distant lands (as Jason sought the Golden Fleece) or to send out colonists to other localities. How far the Phœnicians were their teachers, how much they learned from the Egyptians, and what they discovered for themselves is not known. From the siege of Troy, which lasted ten years, we may conclude, since Troy was only an outpost of the older Chaldæo-Assyrian culture, that, although their civilization in that age might not have been nearly related to the Asiatic, they must have been strongly impressed with the idea that it was superior to their own.

Pelasgian Works.—Structures of such immensity as the Egyptians erected or such as we have met with in Nineveh and Babylon could not be raised by these small communities. Since those powerful Asiatic peoples did not construct buildings composed throughout of substantial materials, it is not surprising that the Pelasgi, whose forests yielded an abundance of timber, should allow that material to play an important part in their architecture. Still, when they had need of monumental memorials, the Pelasgi even in that early time raised works at once so primitive and so massive that they seemed strange to the later Greeks, who regarded them as the works, not of men, but of giants.

City Walls of Tiryns and Mykenæ.—Many of these monumental works still exist, particularly the circumvallation walls of several cities. The oldest is probably that of Tiryns, which is 25 feet thick, and is constructed of huge irregular blocks, some of them more than 3 metres (nearly 10 feet) long and rough as they came from the quarry. Corridors which are $1\frac{1}{2}$ metres wide (nearly 5 feet) run lengthwise within this wall and are roofed with blocks which project on both sides. As the larger blocks, from the irregularity of their surfaces, could not be bedded upon one another with sufficient security, smaller irregular pieces were wedged in between, so as to form a safe bed and bond for the larger. These walls are called "Cyclopean." Somewhat later are the walls of Agamemnon's city of Mykenæ (*pl.* 4, *fig.* 12), as is proved by the masonry, which, though not regularly laid in courses, consists of polygonal blocks well bonded.

Gateways: Gate of the Lions.—In places, as at the principal gate of the city, the so-called "Gate of the Lions" (*fig.* 11), the courses are horizontal and the joints are vertical. The door itself is now for the greater part of its height blocked with earth and débris, so that only the upper part can be seen; it consists on both sides of two huge stone jambs leaning toward each other, upon which is a lintel nearly 5 metres ($16\frac{1}{2}$ feet) long and $1\frac{1}{2}$ metres (nearly 5 feet) thick. Above the lintel is a triangular space, the sides of which are formed of horizontal courses of stones which project toward one another, so as to meet above. In this triangular opening is inserted a block of the same shape, on which are carved in relief two lions standing with their fore-feet on the pedestal of

a central pillar. Egyptian influence as well as the working of a primitive idea can be traced in the form of this gate, while the rendering of the muscles of the animals and the treatment of the reliefs remind us of Asiatic works.

Other City Gates and Walls.—The walls of Phigalia, a portion of which remains, have a gate the jambs of which consist of several stones with oblique ends projecting inward. An immense lintel closes the opening (*pl. 4, fig. 13*). The upper parts of the gates of Amphissa (*fig. 14*) and Samos (*fig. 15*) show us regularly-built work with vertical joints. Besides these walls, similar ones exist at Buphagos and Psophis. In Asia Minor there also exist remains of walls belonging to the same category, as at Kalynda, in Caria, where the masonry is polygonally jointed, and at Iasos, on the Carian coast, where the courses are almost regular. We also meet with similar walls in Italy, as at the city of Cossa, where the irregularly-polygonal blocks are without mortar, and at Volterra, Populonia, Fiesole, and Cortona, where the blocks are in regular courses. Some walls in Greece have doors worked out of horizontal courses into an arched form, while some of the later Italian ones show perfect arch-construction.

We cannot assign a date to the erection of these walls; it seems indubitable that they are older than the later Assyrian buildings. Equally doubtless it appears to us that that method of arch-construction which consisted of horizontally-projecting courses, as here exemplified, cannot be the forerunner of the vaulted building, and from the multifarious relations which existed between the Asiatic civilization and the Pelasgian races we may conclude that the latter derived the arch from ancient Asia, first in imperfect imitation, but afterward in correct construction. The various tribes to which these walls belong bore a multitude of names, yet it would be clear that they were allied in race, or at least belonged to one and the same phase of civilization, even were there no evidence other than that of the fortification-walls, similarly fashioned and nearly contemporaneous, which we have described above. Another common characteristic is the want of any massive monumental temples.

Pelasgian Temples.—The simple nature-worship of the Pelasgi sought its gods in forest and grove, in rock and stream, frequented the spots where they resided, and received visits from them in human form either to aid or to punish, according to their will. Homer mentions temples which enclosed the image of a god that served for the protection of the city, just as each house had its Penates, but gives no further information concerning their structure and arrangements—an omission which he certainly would not have made had they by the beauty of their forms, their size, or their conspicuous appearance given him an opportunity for poetic description. But we find in the older writers glowing descriptions of sacred groves and altars under the open sky where the chief ceremonial of the worship of the gods—the offering of sacrifices—could be performed. Such was the sanctuary of Zeus in the oak-grove of Dodona, which was

•

retained by the Hellenes as a holy place. Wherever mention is made of temples we must believe them to have been made of bronze or of wood and to have been constructed in Asiatic fashion. Pausanias tells us (x. 5, 9) that the first Temple of Apollo at Delphi was built of laurel, while a later one was of bronze.

On the island of Eubœa there remain some rectangular structures built of irregularly-shaped stone slabs, among which, as in the walls of Tiryns, smaller stones fill in the interstices between the larger and make for them a secure bed. There are three of these on Mount Cliosi, near Styra, and one on Mount Ocha, near Karystos. From the structure of these stone temples it is evident that they were contemporaneous with the walls before described. The building at Mount Ocha is internally about 9 metres (29½ feet) long and 4½ metres (nearly 15 feet) wide; the upright walls are about 3 metres (9¾ feet) thick and about 2 metres (6½ feet) high. Slabs which internally project over one another, leaving an opening at the top, form a gable-like ceiling to the room, which is thus higher in the centre. On the southern long face of the rectangle is a gate very similar to that at Mykenæ, built of two opposite stone jambs with a stone lintel. Two small four-sided openings apparently served as windows. Although the building is known as the Temple of Hera, we cannot be certain that it is a sanctuary, but incline to believe it a memorial sacred to departed heroes.

Sepulchres.—In the twenty-fourth book of the *Iliad* we find Homer's description of the burial of Hector. A huge funeral-pile was raised, on which the body was burned. The people quenched the embers with wine. Brothers and friends collected the bones and ashes,

"And placed them in a golden urn. O'er this
They drew a covering of soft purple robes,
And laid it in a hollow grave, and piled
Fragments of rock above it, many and huge."¹

The funeral of Patroklos is similarly described, and express mention is made of the circular form of the mound of earth (Book xxiii.). At Elpenor's burial (*Odyssey*, xii. 14) a stele or upright slab erected upon a hill is mentioned.

Lydian Tombs.—In Lydia are a number of grave-mounds, some of which are of great size and rise in the form of a cone from a stone sub-structure of cylindrical shape. In the interior is a small square burial-chamber roofed above with courses of stone projecting horizontally, exactly like the so-called Temple on Mount Ocha. Around this several concentric rings of walling bound together by cross-walls and filled in with loose rocks form a secure foundation for the cone-shaped mound above. The so-called "Grave of Tantalos," as yet in tolerably good preservation, stands among several others on the north side of the Gulf of Smyrna; its diameter is nearly 60 metres (197 feet). Near Sardis,

¹ Bryant's translation, *Iliad*, xxiv. 1012-1015.

the ancient capital of Lydia, there is a group of mounds, three of them of surpassing size, the largest of which, 80 metres (262 feet) in diameter, is presumed to be the Tomb of Alyattes, mentioned by Herodotos, according to whose description it was crowned with five memorial columns. (See Vol. II. p. 196.)

Rock-tomb of Midas.—Of another kind are the tombs which we find in Phrygia, and which, hewn out of the solid rock, have sculptured façades. The most important of these is the so-called "Tomb of Midas." This has a nearly square surface entirely filled with a geometric ornament and surrounded by a frame-like border; above this a triangular frame, similarly decorated, forms a low gable. This is evidently a reminiscence of a tent-like wooden building covered with a gable roof and closed in front with drapery, and furnishes another element the direct connection of which with the rest of the Pelasgian works cannot be traced. Such a work would have to be regarded as an offshoot of Chaldæo-Assyrian art were it not that certain ornamental details of the same age which occur upon fragments found in the so-called "Treasury of Atreus" (*pl. 4, fig. 4*) also exhibit a geometric ornamentation conceived in a similar spirit.

Treasury of Atreus.—It does not seem to be proved that the so-called "treasuries"—several of which occur in Greece—are entitled to be so named. The most remarkable of these is that of Minyas, in Orchomenos, which Pausanias (ix. 38, 2) praises as a wonder. The best known is that of Atreus, at Mykenæ (*figs. 4, 6*), a circular structure 15 metres (about 49 feet) in diameter; its walls begin to curve from the floor and rise in parabolic outline, each course so projecting over the one beneath it that by this diminution of the concentric circles they finally unite at the summit so as to form a pointed vault. It was evidently built against the rock, in which a chamber is excavated, and the whole was then covered with earth. We are inclined to believe that this structure was connected with ancestral worship. The entrance (*fig. 4*) is built in a manner similar to the "Gate of the Lions" (*fig. 11*), only there are no special door-jambs placed slanting, so as to form an opening narrower above than below, but the horizontally-laid ashlar work of the structure reaches to the door, which is surrounded by an architrave of flat channelled profile. The slab which in the other doorway filled the triangular space over the lintel is here absent. At this place were found several ornamental fragments which give us an insight into the ideas of decoration possessed by the Pelasgi; the base and the shaft of a column (*fig. 7*) have been restored from these. As the shape of the building recalls the Asiatic domes, so certain ornaments in relief (*figs. 8, 10*) seem related to Assyrian decoration, and the spiral patterns (*figs. 7, 9*) recall the bronze utensils of the Northern people—utensils which reached them through the Etruscans, or probably even through the Phœnicians, until they learned to manufacture them for themselves.

Royal Palaces.—Homer gives us descriptions of royal palaces, particularly those of Odysseus, Menelaos, and Alkinoos. A wide fore-court

surrounded by walls and battlements, with outbuildings in connection with it, gave access to an inner court, surrounded by porticoes, with the altar of Zeus Herkeios in its centre. A passage led from this to the great hall of the men, the roof of which was borne by rows of columns, and from which a staircase led to the upper storey. A door led to the women's quarters, which formed the rear of the dwelling, and contained, besides the working-apartment and the conjugal chamber, a series of rooms and chambers both on the ground-floor and in the upper storey. Other rooms for the men lay on each side of the inner court. (See Vol. II. p. 181, *pl.* 23.) The decorations of bronze, gold, silver, amber, and ivory of which Homer speaks so admiringly point to the employment of a construction partly of metal and partly of wood plated with metal, similar to that of Asiatic structures. It is supposed that the interiors of the treasure-houses were also lined with metal, since in that of Orchomenos and in a circular chamber near the Treasury of Atreus fragments of bronze plates have been found; so that it may be that the other buildings were also built monumentally of stone.

The Palace of Menelaos is described in the thirty-seventh line and following lines in the fourth canto of the *Odyssey*; Homer makes Menelaos say that Asia and Egypt had furnished models for the described dwelling. The Palace of Alkinoos is described with even more detail. Walls of beaten brass, silver door-jambs, and a golden door with a golden ring, having on either side the golden hounds wrought by Hephaistos, chairs along the wall hung with gorgeous tapestry made by female hands, and statues of golden youths bearing burning torches, figure in this description.

Though we must make some allowance for poetic fancy, we may yet believe the description to be in the main correct, and even the allusion to the dwelling of Zeus (not a temple, but the home of the human personality of the god at Olympus) in the description of the Palace of Menelaos must not be relegated to the realm of fancy, since the gods were believed to manifest themselves with human forms and needs. The universal use of bronze, and particularly the bronze statues which adorned the mansion of Alkinoos, become doubly significant through the allusion of Menelaos to the Phœnicians as a source from which he procured the models for the decoration of his palace. This allusion clearly indicates the relationship which existed between Pelasgic culture and that of Egypt and Western Asia. The Pelasgi were acquainted with both sources, from which they borrowed, and out of which they worked a style peculiarly their own.

Historical records leave here a notable gap. With the exception of a few architectural remains for the determination of whose exact age no external testimony exists, we have only the short notices of the later Greek writers, as of Pausanias, whose descriptions are based on traditions none too critically examined, and of Homer, concerning whose poetical account always arise the questions, To what date can the definitive collection of the whole, and especially of the portions which most interest us,

be traced? or are not such parts later interpolations? If we consider the time of the Trojan war, the twelfth century B. C., as the most flourishing period of Pelasgic art, then information is entirely wanting concerning its further development on Grecian soil.

In exchange, we find in Lykia some very interesting additions to our knowledge of its further development in a number of tombs, some of them sarcophagi or pillared buildings standing free, others consisting of rock-hewn façades in front of burial-chambers, many being placed close together. It cannot in all cases be determined from what age they date. Some belong to a later era and show the influence of Grecian architectural forms, but others exhibit such unique characters that, even though they may be late, we recognize the perpetuation of forms whose origin lies far back in primitive times, while even the later works attempt to imitate those of an earlier period.

Lykian Rock-tombs.—The appearance of these rock-tombs is shown on Plate 4 (*figs. 1-3*). Figures 1 and 2 are most interesting, since they retain survivals of the timber-construction and furnish us with proof that in the earliest days wood was largely employed in building, and that in the change to stone the same cycle of forms was retained; so that the idea that the fully-developed Greek columnar architecture was a reminiscence of timber-construction has to a certain extent a positive basis. We shall return to this when we treat of Greek architecture.

Probably we have here the transition to the Grecian style which is separated by an interval of several centuries from the Heroic Age, but of this transition we have no records, either monumental or historic; so that Grecian art comes suddenly upon us as a beautifully complete whole, an entity which breathes a spirit differing entirely from that with which the Heroic Age presents us. We observe a much closer relationship when we cross into Italy and consider the works which are usually known as "Etruscan."

Etruscan Architecture: Walls and Gates.—The origin of Etruscan art must be sought in the remains of Italian city walls, to which we have referred (p. 53) in connection with those of Greece. We must now return to them, as in the construction of the portals we find an element which does not occur in Greece. This is the formation of the arch with wedge-shaped voussoirs put together according to the rules of vaulted construction, as in the Gate at Falerii (*pl. 5, fig. 8*), in which the keystone of the archivolt is decorated with a sculptured head. In a doorway at Volterra not only the keystone, but the springing stones, bear carved heads. In other buildings, as in the city gate of Arpino, a pointed arch is formed by projecting horizontal courses.

Akin to the Treasuries are such buildings as the so-called "Spring-House" at Tusculum, the pointed vault of which is also constructed of horizontal courses. Similar to this is the Mamertine Prison at Rome, the lower chamber of which—the so-called Tullianum—has a vault of the same description. Many thousand cone-shaped towers called "Nuraghi,"

from 10 to 15 metres (33 to 49 feet) high, exist in Sardinia. These contain one or several bell-shaped adjacent or superposed chambers, which were used as tombs and exhibit a similar construction.

Etruscan Tombs.—In Etruria this corbelled construction obtains in many tombs, as in the very ancient ones of Regulini and Galassi, in Cære. Tombs are the most important relics of Etruscan art, and a large number have been opened and examined. Some are hewn in tufa, or hard rock, in which several chambers frequently communicate, while others are independent structures in which the tumulus-form is more or less preserved. The rock-hewn chambers have ceilings partly flat, partly sloping upward toward the middle, worked into beams and rafters, in imitation of wood-construction. Up to the present day the numerous inscriptions found in these tombs have not been deciphered; still, though it is not possible to arrange them chronologically, we must consider those oldest which are nearest to the tumulus archetype.

The largest tomb of this kind is the Poggio Gajelle, at Chiusi, a natural mound about 100 metres (328 feet) in diameter, hollowed out into several superposed series of labyrinthine passages and funeral-chambers. The one called the Cucumella, near Volci, an artificial mound about 60 metres (nearly 200 feet) in diameter, walled around at the bottom and now about 15 metres (49 feet) high, bears upon its summit two tower-like elevations, one of which is quadrangular, the other cone-shaped. Pliny describes the tomb of King Porsenna as square, and pierced below with a labyrinth the endless turns of which could not be threaded without a clue; five pyramids rose above the substructure. Five conical turrets still remain upon the wrongly-named Tomb of the Horatii and Curiatii, at Albano (*pl.* 5, *fig.* 4). The interior of the rock-tombs at Cervetri (*figs.* 1-3) probably gives us a picture of the abodes of the living. Figure 5 gives an idea of an exterior façade which, though probably the work of a later date and constructed under Grecian influence, yet in many respects brings before us a picture of the Pelasgian Heroic Age.

Period of Etruscan Art-culture.—Etruscan art can be followed from early prehistoric times far into the historic. It ruled throughout Italy until the conquering Romans adopted the art of the conquered Greeks, but mingled with certain Etruscan elements, so that the boundary-line cannot exactly be determined. The Roman historians themselves briefly describe the advance of the art-culture of their people by saying that at first all was Tuscan, while later all was Greek. The most ancient buildings of Rome are of the Etruscan era, and so we have historic information and certain data concerning some Etruscan works.

The distinguishing features between Etruscan art and the later Grecian are especially hard to define in Rome, because Greek influence made an impression at a rather early period, its continued increase giving birth to the later native Roman art; so that what was Grecian in the Roman sense was yet not Grecian, since it could not be separated from the elements derived from Etruscan architecture.

But the elements which form the foundation of Etruscan art are so closely allied to those of the old Pelasgian that the Romans contrasted them with the later period of Grecian art, and thus furnish us with a reason for seeing in the art of the Etruscans only the further development of the old Pelasgian. But whether the entire Etruscan life was but a continuation of that of the old Pelasgian or the religion alone was directly derived from the Heroic Age must remain undetermined, and it is still an open question to what extent the races were allied; yet as the older Asiatic culture was perpetuated by transference from one race to another and reached its highest point at a comparatively late period among the Persians, so Pelasgian culture and art in the course of their passage from one people to another were developed among the Etruscans. Even among these they survived the older Asiatic for a short time only, though, unlike the latter, they did not quite disappear, but continued to live on to a more perfect development in classical Greek culture.

Inception of Roman Art.—Although the boundary-line is not a rigid one, we may reckon the commencement of Roman art at about the middle of the second century B. C., from which date we possess a complete series of monuments illustrating the entire round of public life. From this age date the buildings of the Capitol and of the Forum, bridges and aqueducts, city walls, tombs, etc. The first arrangement of the Forum, the centre of the city, is attributed to Tarquinius Priscus (616–579 B. C.), the conqueror of Etruria. It was a place for public assemblies, a market in which were booths where all things needful were exposed for sale. As the city grew, this sale of commodities was drafted off into separate markets, and so the Forum became splendid with grand edifices; thus in the third century the Goldsmiths' Forum was erected for the exchange of gold and silver and the trade in jewelry. But the magnificence of a later generation rebuilt the Forum as well as all Rome in Grecian style. The grandest work of Etruscan art was executed about 600 B. C.: it was the sewerage system of Rome, culminating in the Cloaca Maxima. To this earlier age of Rome belongs also the first Circus Maximus.

Etruscan and Roman Temples.—The temples of both the Etruscans and the Romans followed the ancient traditions, and, though the walls and columns were of stone, the beams and roofs were of wood. A characteristic example of this is the Temple of Jupiter Capitolinus. It had three adjoining sanctuaries, with a portico of three rows of columns in front and lateral porticoes of a single series of shafts; ordinary temples had only the anterior portico. Vitruvius mentions such a temple, not as something left from historic times, but as extant in his day; he describes it as low, broad, spreading, and top-heavy. Especially characteristic of the time are the wide projecting roof, the comparatively high pediments, and the wide spacing of the columns. Figure 7 (*pl.* 5) shows such a temple. It is believed that in this description he had in view the Temple of Ceres, Liber, and Libera, a three-celled temple built in the fifth century B. C., and extant in the time of Augustus.

But we have further sources of information, and the copy of the temple-façade shown in Figure 5 (*pl.* 5) does not entirely agree with the description of Vitruvius; so that Semper, making use of all sources of information, has reconstructed the Etruscan temple in all the glory of its coloring, as shown in Figure 6. Among the temples we must mention that of Salus, which C. Fabius Pictor enriched with wall-paintings, as also that of Virtus et Honos, which dates from the close of the third century *B. C.*, and which was afterward decked with works of Grecian art taken from Syracuse. Figures 9 to 12 are characteristic examples of the details of Etruscan architecture.

Public Works.—The first aqueduct, the Aqua Appia, was erected 313 *B. C.* in 272 *B. C.* the Anio Vetus, but both were at first of small capacity. A unique monument was the *Columna rostrata*, which in 261 *B. C.* was erected in honor of C. Duilius and commemorated his first naval victory over the Carthaginians (261 *B. C.*). How far the basilicas belong to the period under discussion must be left undetermined; the Greek title renders it probable that we should postpone their consideration till we come to speak of Grecian art in Rome.

Conclusion.—If we can trace the development of Architecture from the old Pelasgian times through the Etruscan epoch to Rome, we can still more definitely trace the various mechanical arts which are allied to Architecture. Metal-work had indeed ceased to have in Architecture that importance which it assumed among the early Asiatic peoples, and through them attained among the earliest inhabitants of Greece; yet it flourished among the Etruscans for employment in small utensils and ornaments. The ceramic art was so transcendently developed, so superior was the pottery of the Etruscans, that they on the one hand furnished the Greeks even to the time of the greatest art-development of that people with cherished products of their industry, and on the other supplied the Celtic and Germanic races of the North with their productions. Thus these races were provided with elements of culture which may be traced to Etruria; so that we see the last phases of Pelasgian art displayed in a comparatively late age in the lands north of the Alps, though of course it is not monumental art which reappears here.

We have already seen in treating of heroic times that many small independent communities will not permit of the development of an art comparable to that which results from a great people working together toward the same goal. This federation of small communities endured in Italy among the Etruscans, Latins, and others; so that even in their case monumental art does not present us with results of great magnificence, and therefore it can still less be looked for among the Celts and Germans, where there is no tradition of any similar federation of powers, where the simplicity of needs was against art-development, and where the sentiment for magnificent creations was first awakened when an entirely new element of national genius gave it direction, though meanwhile even classical culture had perished.

IV. CLASSICAL ARCHITECTURE.

I. GREEK ARCHITECTURE: PERIOD OF HELLENIC INDEPENDENCE.

It is ideal sentiment only that can unite peoples in grand undertakings and give a higher direction to Architecture. This ideal sentiment was possessed in a supreme degree by the Hellenes. What the genesis of the peculiar development of Greek architecture was, what factors entered into it, what earlier and middle stages it passed through before it reached the climax of its glory, cannot be established satisfactorily, because both notices and monuments have only come down to us from an age in which a previously rich architecture appears to have reached almost the highest point of its development.

Transition from Pelasgic to Hellenic Art.—If we follow the history of Greece after the close of the mythic days of Pelasgian antiquity, we come upon the immigration of the Dorians at the commencement of the last thousand years before Christ. This people brought a new element into the social life of the region, which from this period began to change from Pelasgic to Hellenic, and this Hellenic culture spread far beyond the limits within which certain races worked, and became on the one hand the basis, and on the other the unattained ideal, of the collective culture of the later ages. However intimately the new Doric element blended with the older or Ionic, there was still a difference between them both in life and in architecture, and two independent yet parallel schools of forms arose—namely, the Doric and the Ionic—which gave outward expression to the two elements.

The Dorians and Ionians.—The Dorians at the time of their entrance into Greece may be regarded as a people nearly devoid of culture, familiar with nothing more than the primitive wooden buildings in the mountains. The Ionians inherited the ancient Pelasgian culture, and in their architecture, as proved by their monuments in Asia Minor, likewise evolved most of their forms from timber structures, which are thus most probably the prime source of Greek architecture. But the ideal sentiment of the Hellenes planted Architecture upon a basis different from that in which they found it as left by the Asiatics and the Pelasgians. The monarchies of the Pelasgian Heroic Age had passed away: Hellenic architecture was not ordained the task of building palaces. Under the open heavens the free citizens discussed their public affairs, while their private life was one of the greatest simplicity; thus neither of these called the higher Architecture into requisition, and it became the expression of an ideal purpose almost free from material restrictions.

The Greek Temple.—The development of Grecian art was chiefly in the erection of temples. The religious conceptions of the Greeks were primarily artistic. Their poets taught them the knowledge of their gods

without other intention than that through the fulness of poesy which resides in Grecian mythology they might lift their hearers out of everyday life into an ideal realm. The earnestness and the strength of their morality were entirely independent of their religious conceptions, which latter had therefore little practical significance. The temple itself probably had none; to the Greeks it was not a dwelling of the gods nor a space in which great numbers of the people could assemble, nor was it an abode in which dwelt a multitude of priests performing there their offices: it was an ideal memorial of the Godhead, an artistic shrine for the image of the Deity, an adornment and a decoration of the city, a common ideal possession which, erected by the collective contributions of all, was a common tie and was to every individual a cause of pride, an incentive to patriotism, a sign that the god therein worshipped, and whose image the sanctuary enclosed, was the protector both of the city and of himself.

In the temple of the Deity was to a certain extent embodied the ideal community of the state, to protect which was the duty of all the citizens, but which without some outward expression could not have bound their hearts so closely. In the temple Architecture was through an ideal purpose guided to a higher development. The architecture of the temple was the proper art-speech of the people, and it was also the only one; so that when we see monumental architectural activity otherwise exhibited the forms are those of the temple applied to other purposes.

Timber-construction.—The starting-point was the timber structure. But an ideal conception cannot find expression in a material so easily destroyed by fire, and a glance at Egypt, whose monuments bid defiance alike to time and to the influence of the elements, must have induced the Greeks to erect the symbol of their state-existence, the temple of the protecting Deity, of more durable materials.

The Greeks had derived from the Pelasgi the independent existence of the individual cities as distinct states, but the necessity of opposing union against greater foreign powers compelled them to encourage the spirit of federation, and common sanctuaries at once gave expression to this requirement and cemented the federated bodies. But this federation sprang always from their regard for independence and freedom. Rivalry must have been an important incentive, and to it and to the force of the sentiment of race-independence we owe the parallel developments of two distinct cycles of forms.

Pausanias relates that he saw at Olympia structures of wood which were said to be the remains of an older temple of the same material. In the market of the city of Elis he also saw a temple-like building the ceiling of which was borne by oaken columns, and was reputed to be the tomb of the chief Oxylos, who led the Dorians into the Peloponnesus. The Sanctuary of Poseidon Hippios was of oak, and the Emperor Hadrian erected a monumental temple around it. Pliny tells of an ancient Temple of Hera at Metapontum, in Lower Italy, the columns of which were of vine-wood.

Stone-construction reaches also into high antiquity. We will omit description of remarkable remains which perhaps belong to the Pelasgic period, as the columns which were found in the Sanctuary of Artemis Brauronia on the Acropolis of Athens, the octangular columns of the Temple of Apollo Thearios at Trœzen, and the columns of the Sanctuary of Artemis Limnatis near the village of Bolimnos, between Laconia and Messenia, because the time of their execution is unknown. We will also omit the pyramids which were erected in Greece, and which may be cited as testimony of the influence of Egyptian art over that of ancient Greece, as such works give no clue to the origin of details, and belong more probably to the flourishing period of Pelasgian art than to the era of the development of Hellenic architecture.

Doric Temples.—The oldest Doric temple is said to be that of Hera at Olympia. This had a peristyle, and also, besides the cella itself, an antechamber and a rear hall, which again opened between two columns into the peristyle; one of the two columns of the rear hall was of wood. Though built soon after the Doric immigration, this yet exhibits the complete perfection of the Doric temple in its arrangement, which, as it is not based on Pelasgian models, was probably that which was applied to temples by the Dorians in their ancient home, and was by them brought to Greece.

The temple-façade upon the vase of Klitias and Ergotimos, preserved at Florence (*pl. 6, fig. 14*), may be considered the oldest Grecian monument extant; but we must not forget that the painter probably did not intend to give a correct representation in our modern sense. To a similarly early age belongs the temple at Assos, and also that of Corinth, of which seven columns and a portion of the architrave are still preserved, and reveal to us the severe proportions of the Doric cycle of forms perfectly developed.

Before we follow the history of Greek architecture further it is essential to present the characteristics of the temple in general and those of the two form-cycles in detail.

Characteristics of Temple-construction.—The temple-area is entirely enclosed by a wall. The temple itself stands upon a substructure of three or more stages, each of which is too high for a step; so that they are ascended by a flight of steps both in the front and in the rear. Upon this substructure rises the rectangular temple, the transverse breadth of which equals the half of the length, while both ends or the entire circuit are furnished with a row of columns which support the massive blocks that form the entablatures. The roof of the colonnade itself was borne by stone lintels, which rested on one side on the entablature of the colonnade, on the other on the walls of the cella, and between these lintels the roof was formed of thin slabs. The cella, or sanctuary, had no windows, and obtained light either through the opened door only or through an aperture in the roof. In front of the cella was an antechamber, or *pronaos*, and behind it usually a rear hall, or *posticum*. The roof at both extrem-

ities ended in a gable. Some temples which have an entrance-hall with two columns, but no surrounding colonnade (*pl. 6, figs. 10, 14*), are called *ædes in antis*. Those surrounded by a colonnade (*figs. 3, 5, 6, 7*) were called *peripteros*; if there were two rows of columns, they were called *dipteros*. When a single row of columns occupied a double width, so that the plan was similar to that of the *dipteros*, the arrangement was called *pseudodipteros*. When a portion of the cella was parted off at the rear (*fig. 1*), this separated part was called the *opisthodomos*. The cella contained the image of the god, which, together with a small sacrificial altar and the sacred gifts, was elevated upon a throne at its rear extremity. In the pronaos stood a shell with holy water, with which each worshipper, as he entered bearing an offering or a sacrifice, sprinkled himself as a sign of the inward purification. The posticum was the receptacle for the golden ornaments and precious objects of the public treasure, as well as for the sacred utensils reserved for great festivals.

In large temples the cella is divided into a nave and two side-aisles by rows of columns, which latter bear a gallery. The nave is in this case lighted by an opening in the roof; such a structure is a *hypæthral temple* (*pl. 7, fig. 4*). But, though in its interior the temple contained different halls of varying size and for diverse purposes, this arrangement was not evident on the exterior. The established form of the temple had become to a certain extent holy, and the Greek language of forms recognized only the accustomed simple shape as that of the temple; so that the exterior in no way expresses the interior arrangement.

Doric Order.—When we describe the superstructure of the Doric temple, we must first of all notice the careful proportioning of the somewhat tapering columns, which were set upon the substructure without a base. The shafts were fluted, and the blocks which composed them so interlocked that the joints were entirely invisible. A strongly projecting roll-moulding (*echinus*) formed a simple capital, which supported a square slab (*abacus*). The simple lintels (*architrave, epistyle*) stretched from column to column without any detail. Over them, separated by a small moulding, stood the frieze, which was composed of a number of larger projecting blocks called *triglyphs*, the spaces between which were filled with thinner slabs, called *metopes*, usually adorned with carving. Above the triglyphs was placed the crowning cornice (*geison*), formed of thick projecting slabs, which supported the margins of the roof and was adorned upon its inclined lower surface, above each triglyph and metope, with slightly-projecting ornaments (*mutuli*), to which, three or six in a row, cylindrical drops were appended. Above this was the gutter (*cyma*), behind which the rain-water collected and was conducted to the four angles of the structure, whence it flowed through spouts in the form of lions' heads. The inclined lines of the pediments expressed the shape of the roof; along them extended the cornice and the cyma in a somewhat modified form. The triangle thus enclosed (*tympanum*) was adorned with sculptures, and sculptured *acroteria* stood upon the summit and both

extremities of the pediment. The roof was of stone slabs, the imbricated junctions of which were covered with curved tiles corresponding with the palm-like ridge and end tiles upon the ridge of the building and over the cornices. It is believed that the whole was richly adorned with bright but harmonious coloring.

The ancient wood structure is yet perceptible in the monumental stone edifice—of course not in the sense that each single form was existent in the rude wooden structure in the place in which we find it, with all the refinement imparted to it by the language of form, but in the sense that the outward form is in the main similar to that of the wooden temple, and that the constructive ideas were derived from the latter. From the temple of wood came the sacred traditions which passed over to the temple of stone. Even the form of the temple continued through all the ages as a sacred tradition—a form not necessarily linked to a complicated group of buildings, existing even where there is but a simple cella and portico, but which in a complicated group of buildings necessitates the omission of a part of the roof. Notwithstanding the delicacy of the lines, we can yet see the tree-trunk in the column, so plainly is the wooden origin evident in single forms. For the triglyphs we can find no other parentage than the fastenings of the ends of the beams, which in the wooden building projected upon the long sides of the rectangle, and were also represented on the ends of the building by short pieces.

Although in the monumental building the stone-linted roof of the portico lies higher and is differently constructed in front, it is still a reminiscence of the wooden building. The mutules are survivors of the formerly-visible ends of the rafters, although in the monumental building they occur upon the ends of the structure as well as upon the sides, where alone real rafter-ends could occur. Plates 6 and 7 give a number of Doric temples, while Figures 6–9 of the latter Plate give the details of columns and entablature.

Ionic Order.—The Ionic temple is more elegant than the Doric. The columns have more slender proportions; the architrave is lighter. The Ionic column has a base in which various mouldings find application. One of these forms—that called the Attic—was adopted by all the later schools of architecture. The delicate shaft has narrow deep flutings, alternating with fillets; the neck of the column is enriched with an ornamental frieze; between the echinus and the abacus lies a cushion rolled into volutes upon both sides; the abacus is enriched, as is also the architrave, which is divided into three faces; the frieze, of less height than the Doric, may be plain or adorned with carving, and the cornice is set with dentils.

The entire order certainly does not exhibit a finer sense of proportion than the Doric, which, in fact, displays an unsurpassable refinement in the arrangement of its lines; yet the Ionic has greater softness and richness of details. It may be compared with the Doric as feminine beauty with masculine strength. The Ionic bears also in its entire aspect some-

tion, and gained great fame because they employed Parian marble, whereas their contract only obliged them to use sandstone. Famous also is the Temple of Zeus at Athens, which was commenced under Peisistratos by the architects Antistates, Kallaischros, Antimachides, and Porinos, yet remained unfinished until the Emperor Hadrian completed it.

The Older Parthenon, upon the Acropolis—a peripteral temple of eight columns on the front and sixteen on the sides—though certainly of smaller extent, was yet famed as the more complete work of art. It was destroyed by the Persians, but enough of the old arrangement has recently been discovered beneath the later building to allow, in conjunction with fragments found in the ancient wall of the citadel, a spirited restoration to be made, and also to show that it was never entirely completed.

The Temple of Athena at Ægina was probably built after the Persian war, yet still in the earlier half of the fifth century B. C. It is a hypæthral peripteros of six columns by twelve, about 14 metres (46 feet) wide by twice that length. Two rows of five columns (*pl. 7, fig. 7*) part the cella into a nave and two aisles. The structure was partly of marble, and partly of sandstone covered with stucco. A temple *in antis* is that of Themis at Rhamnos.

Works of the Fifth Century B. C.—In Lower Italy and Sicily there are also a great number of Doric temples belonging to the fifth century B. C.; among the most ancient are two temples at Syracuse. On the island of Ortygia have recently been found the remains of a Temple of Artemis, a peripteros of six columns by eighteen. The Temple of Athena at Ortygia was a peripteros of six columns by fourteen. At Selinus yet remain the ruins of six peripteral temples.

Temple of Olympian Zeus.—At Agrigentum are the ruins of several temples, of which that of Olympian Zeus (*fig. 5*) is especially interesting because the columns are not detached; but the temple is enclosed by a wall to which half-columns are attached, seven in front and fourteen on the longer sides: these carry the entablature. So firmly established was the conception of a temple as a sacred tradition that the portico was here carried up as an attached screen, though the necessities of the construction demanded the erection of enclosing walls. The pediment was formerly decorated with statues, one series representing the battle of the gods with the giants, the other the surrender of Troy. The interior is divided into a nave and two aisles by two walls set on each side with pilasters; the upper part of these walls bears figures of giants. The dimensions of this temple are 104 metres (340 feet) by 52 metres (170 feet), and the height reaches 36 metres (118 feet). This temple had not been finished at the time when the city was destroyed by the Carthaginians, in the year 400 B. C.

Not much smaller was the Temple of Zeus at Selinus, a pseudodipteros with eight columns in front and seventeen along each side, each column nearly 15 metres (49 feet) high by 3 metres (10 feet) in diam-

eter at the bottom, and about 2 metres (nearly 7 feet) at the top. This temple also was left unfinished through the destruction of the city by the Carthaginians.

Temple of Poseidon.—The ruins of several temples are still extant in Poseidon's city of Pæstum (Poseidonia). The most important is that of Poseidon (*pl. 6, fig. 7; pl. 7, figs. 1, 2, 6*), a dipteros of six columns by fourteen—smaller, indeed, than the great temples just described, but nevertheless impressive through the earnestness of its simple forms and the harmony which reigns throughout. The interior is divided into a nave and two aisles by columns, and there is a second row of columns upon the first. The centre of the roof was open. This is, on the whole the most complete Greek temple now existing, and, judging from other specimens of the Doric style, can hardly be later than 500 B. C.

At Metapontum, upon the Gulf of Taranto, are still standing the ruins of two temples, one of which is remarkable because it shows fragments of a former richly-painted covering of baked clay.

Architecture of Athens.—In Greece, particularly in Athens, architectural activity received a new impulse after the close of the Persian war. Themistokles, and after him Kimon, restored the partly-destroyed walls, and by means of the "long walls" united the fortifications of Athens with the harbor of Peiræus and the citadel of Munychia. Kimon built at the north-west end of the market-place a magnificent hall the wall-paintings of which celebrated the heroic deeds of the Athenians; he also erected the Temple of Theseus at Athens (*pl. 6, fig. 5*) of the Doric order, and a small temple in the Ionic on the Ilissos; also, probably, the small Ionic Temple of Nike Apteros (the Wingless Victory) in front of the Propylæa.

Under Perikles, Athenian art reached its climax. He finished the fortifications commenced by Themistokles and Kimon, built the Odeion, dedicated to the Muses, and restored with the utmost magnificence the sanctuaries on the Acropolis, which had been overthrown in the Persian war.

New Parthenon.—Above all, Perikles must be credited with the erection of the new Parthenon (*pl. 6, figs. 1, 2; pl. 7, figs. 3, 8*), that noblest and most harmonious of Doric temples, which the architects Iktinos and Kallikrates completed in the year 438 after sixteen years of labor. As is shown in the view of the Acropolis (*pl. 6, fig. 12*), the structure rises high above the walls, dominating the entire group of buildings. It is even to-day—at least, in its exterior—except the Temple of Theseus, the best-preserved and most complete Grecian structure, and is distinguished both by the nobility of its proportions and by the delicacy of all its forms. It is a peripteral temple of eight columns by seventeen, 69 by 31 metres (226 feet long by 101 in width). The interior, indeed, does not now permit the ancient architecture to be clearly recognized, and the sectional view (*fig. 2*) rests only on conjecture. As in no case does the hypæthral arrangement of a temple now exist in a complete state, the



attempted restorations differ widely from one another, and it may perhaps be questionable whether the arrangement corresponds to that shown on Plate 7 (*fig. 4*).

The Propylæa.—Perikles also built the Propylæa on the Acropolis (*pl. 6, figs. 11, 12*)—that noble work in which temple-architecture was applied to a partially profane purpose; for, though the Propylæa formed a portion of the ramparts of the Acropolis, it yet constituted the entrance to the sacred temple-enclosure. As the entrance to the sanctuary, it was necessary that it should wear a sacred form, and as the gateway to the majestic buildings which adorned the Acropolis it had to be a noble work of art. The architect, Mnesikles, executed the work in 437–433 B. C. Although the exterior is Doric, the interior has Ionic columns. The splendid ceiling of the hall excited the highest admiration of contemporaries by its immense lintels and its rich sculptural and painted adornment.

The Erechtheion.—The Ionic order attains its greatest elegance in the Erechtheion, a small temple also situated on the Acropolis (*pl. 8, figs. 1–3*), a picturesquely irregular group having a small temple upon each side of a central hall. Commenced just after Perikles's time, it was not, according to an inscription, completed in 409 B. C. In more ancient times there here stood a place of worship enclosing the wooden image of Athena which fell from heaven, as well as that goddess's sacred olive tree and Poseidon's salt-spring, called into existence by these deities in a friendly contest of power. The ground-plan and the section (*pl. 6, fig. 8; pl. 8, fig. 3*) are given according to Hansen's restoration. Under the great hall, the roof of which is borne by Ionic columns (*fig. 4*), are seen the trident and the sacred spring. From the temple access was obtained in the rear to a smaller portico, the roof of which was borne by six female statues (*caryatides; fig. 5*). This small temple is usually considered as the sanctuary of the nymph Pandrosos. According to Hansen's opinion, the middle part of the principal temple was open in hypæthral fashion, and in it grew the sacred olive, while the anterior room of the same temple was divided into three cellæ, of which the middle one was sacred to Athena and the lateral ones to Poseidon and the nymph Pandrosos respectively.

Other Temples.—Among non-Athenian buildings which were erected at this date is the Temple of Nemesis at Rhamnos (*pl. 6, fig. 10*), which, although it remains uncompleted, comes nearest in the fineness of its proportions to the works upon the Acropolis. In Thorikos, on the east coast of Attica, are the remains of a building which, notwithstanding its peristyle, may have served ends other than those of worship. It has seven columns in front, but the centre intercolumniation and the two middle ones of the fourteen columns on the longitudinal sides are wider than the others. The interior arrangement is not preserved. Perhaps the Propylæa and Temple of Athena at Sunion, as well as that of Demeter at Eleusis, are of this date (*pl. 8, fig. 16*). The latter is a structure of very peculiar plan, begun by Iktinos, architect of the Parthenon. It is a large

square hall divided by four rows of Doric columns, which were erected by Koræbos, into five aisles, the centre one of which, about 20 metres (65 feet) wide, had an open roof, while above the four side-aisles rise upper series of columns, erected by Metagenes; Xenokles constructed the roof. Although quadratic in plan, the arrangement of the aisles is such that they have a longitudinal direction, and so the face upon which the entrance is placed must be considered as the longitudinal side.¹ In the year 318 B. C., Demetrios Phalereus added a portico of twelve Doric columns.

Iktinos also built (430 B. C.) the Temple of Apollo at Bassæ, near Phigalia (*pl.* 6, *fig.* 6), a peripteral Doric temple of six columns by fifteen, 14 metres (46 feet) wide and 38 metres (124½ feet) long, the walls of whose cella enclosed Ionic half-columns on their interior faces (*pl.* 8, *fig.* 12). A single column—which probably bore a votive offering—has a richly-decorated capital (*fig.* 13). Little remains of the great Temple of Zeus at Olympia built by Libon, and which, though similar in dimensions to the Parthenon, had only six columns in front and fourteen on each side; yet enough is left to enable us to reconstruct the exterior (*pl.* 6, *fig.* 4), while the interior, with its colossal statue wrought by Pheidias, had, according to a wall-painting in the new Museum at Berlin, the appearance shown on Plate 7 (*fig.* 4).

About five miles from Epidauros stood a famous Temple of Asklepios in a thickly-wooded grove in a beautiful valley between two mountains. This temple was distinguished for its splendor, and bore the inscription, "Let only pure souls enter here." Some of its foundations can still be traced. The great theatre by the sculptor Polykleitos at Epidauros is the best-preserved ruin of its kind in Southern Greece.

At the close of the fifth and beginning of the fourth century B. C. the Athenian sculptor Skopas built the Temple of Athena at Tegea, which, according to Pausanias, had Ionic columns externally, while in the interior the Corinthian order surmounted the Doric. This is the first appearance of a new order with a tall, rich capital adorned with leaves, slender shafts, and an entablature still richer and more elegant than that of the Ionic.

Works of the Fourth Century B. C.—To the fourth century belong the great theatre of Megalopolis and that of Messene. The former, which Pausanias regarded as the largest in Greece, was elliptical, with a circumference of fifty stadia; its ruins are still well preserved. The latter was surrounded with magnificent walls of ashlar-work with numerous round and rectangular openings; its stadium, with its Doric porticoes, is in great part still extant.

The Temple of Apollo at Miletos was a dipteros of ten columns by twenty-one, commenced in the beginning of the fourth century by Paionios of Ephesos and Daphnis of Miletos, yet was scarcely finished at

¹ Fergusson's plan shows the reverse of this. The entrance is at the end of the central nave, as is usual.—ED.

the end of the century. The Ionic order was employed externally, while interiorly the cella was adorned with pilasters having capitals of various styles; near the entrance stood half-columns with Corinthian capitals (*pl.* 8, *fig.* 15).

The Temple of Athena at Priene must also be referred to this date; it was built about 340 B. C. by Pytheos, and was consecrated by Alexander the Great. It was an Ionic peripteros of six columns by eleven (*fig.* 14).

Mausoleum of Halikarnassos.—In Asia Minor the Greek culture came into contact with the Asiatic. If in the Ionic order we recognize a series of Asiatic elements permeated by the Greek spirit, we must not think it strange if other Asiatic elements recur. Thus a work which in its day was widely famed, and which has given its name to a whole class of monuments, was linked to Asiatic traditions. This was the tomb which Artemisia in the year 354 B. C. erected to the memory of her husband, Mausolus, king of Caria, in their capital, Halikarnassos. The monarchy had more relations to the Asiatic than to the Greek civilization, and so the monument assumed the arrangement of the many-staged pyramids of Assyria and Babylonia. Both in its execution and in the proportion of its details it is one of the noblest of Ionic buildings. The architects were Pytheos and Satyros, the former of whom designed the Temple of Athena at Priene, and the sculptures are ascribed to Skopas, Bryaxis, Timotheos, and Leochares. A substructure of five stages, 36 metres (118 feet) long and 27½ metres (90 feet) wide, enclosed the burial-chamber. Upon this stood a cella surrounded by an Ionic peristyle of nine columns by eleven. A pyramid of twenty-four steps, which upon its uppermost stage bore a chariot with the colossal statue of Mausolus, crowned the structure. Constructive necessities seem to exact that the cella, upon which the weight of the pyramid rested, must have been vaulted. The work existed until the Middle Ages, but in 1402 A. D. it was destroyed, and the stone was removed to build a fort; yet so many fragments remain that there can be no doubt concerning its original form.

The Temple of Artemis at Magnesia, a pseudodipteros built by Hermogenes, is also Ionic, as is likewise the peripteral Temple of Dionysos erected by the same architect at Teos and the Temple of Aphrodite at Aphrodisias, a pseudodipteral structure of eight columns by thirteen surrounded by a peribolus with Corinthian columns.

The inner Propylæa at Eleusis is also Ionic. Yet even at this date we meet with the Doric order in the Temple of Demeter at Pæstum (*pl.* 7, *fig.* 9), but in a form unlike the solemnity and severity of the ancient period. The four columns of the pronaos have bases. The temple is peripteral, with six columns in front and thirteen on each side, and measures 14 metres (46 feet) by 32 metres (105 feet). The so-called "Basilica" at Pæstum is also Doric.

Choragic Monuments.—Athens has a number of interesting minor memorials in the choragic monuments which were erected by individuals for the display of the tripod which they and their choir had carried off as

the prize of a musical contest. Some bear the tripod upon a column, while others are built in the form of small temples. A street in Athens has so many of these memorials that it is named "Tripod Street." Perhaps the most beautiful is the choragic Monument of Lysikrates (*pl.* 8, *figs.* 10, 11), who erected it to commemorate a prize won in a musical contest in the year 334 B. C. Though much mutilated, it is in all its essential parts still extant, but is better known by the title of the "Lantern of Demosthenes" than by its own. The Monument of Thrasyllos (*figs.* 8, 9; 320 B. C.) is more like a temple-façade, yet simpler in form, and is allied in many ways to the Asiatic tomb-façades. Here a grotto on the south side of the Acropolis enclosed the tripod. The façade was destroyed in modern times.

Transition of Grecian Art.—The political independence of the individual Greek communities could no longer exist after powerful states began to develop in Europe and there had sprung into existence grand ideas of world-domination to fight for, and to sustain which great authority must be wielded. The Persian war was, in fact, a war of subjugation which had it been successful would have given the Persians a world-wide sovereignty, and which rendered necessary a stable Greek confederation in which the leadership of the other states should be given to a single one. The struggle for this hegemony marks the period after the Persian war until the Macedonians—a race dwelling to the northward, who until then had taken no part in Grecian development, and whom the Greeks even reckoned barbarians—acquired under King Philip (338 B. C.) the leadership of Greece.

Alexander the Great then conducted the Greeks into Asia, and there began once more a struggle for universal dominion in which the Greeks overthrew the empire of the Persians and carried their conquering arms even to India. Thus there was opened through Asia a way for Greek culture, which here began its world-wide domination. But there was also a relaxing of those restraints of delicacy, nobility, and harmony of form which until then had confined Grecian art within due bounds. While thus limited it reached a degree of perfection which previously it had not attained, and which has never been surpassed. The works of the flourishing period of Grecian art could not compare in area with those of Egypt or Asia, nor in fancifulness of appearance with the fairy-like fabrics of the latter; but Asia, while receiving the Greek culture, exercised an influence upon its further development through the introduction of new elements, and gave to it a soft voluptuousness and a heretofore unknown richness of forms.

Corinthian Order.—We have already followed the decadence of the Doric and the advance of the Ionic; henceforward we must follow that lavish application of ornament which was evidenced by the introduction of the Corinthian capital. But the extension of the power of Greece over Asia and the admixture of Asiatic forms with Hellenic also resulted in giving new purposes to Architecture. From this period it is

no more the simple cella containing the image of a deity: the palace equal in grandeur and magnificence to that of the Asiatic monarchies, and works of luxury of every kind, henceforward demand our notice.

Alexandria.—Alexander the Great built in Egypt the metropolis which bears his name, and which is perhaps the grandest example of a city deliberately outlined and immediately built up in full artistic completeness. Deinokrates, the first architect of his time, laid out the thoroughly-considered plan upon an excellently chosen site between Lake Mareotis and the sea. A magnificent harbor in the Mediterranean and a canal between it and Lake Mareotis, which served as a harbor for the Nile vessels, completed its connection with the outer world. The city was laid out in straight parallel streets and was intersected by two main streets, one of which, about 100 feet wide, ran westward from the Canopic gate to the Necropolis. The principal streets ran north and south, allowing passage to the fresh winds coming from the sea. Canals ran through the streets and conducted the waters of the Nile into the cisterns of the houses. The latter were exclusively of stone, with vaulted storeys and terraces instead of roofs.

Temples and Public Buildings.—Alexander himself erected the Temple of Poseidon, the theatre, with a stadium and hippodrome, a palace for the supreme court, and a gymnasium with extensive porticoes. The royal citadel, which included a fourth part of the entire city, contained, besides the royal palace, the museum with its porticoes and the world-renowned library and academy; to it also belonged the Tombs of the Kings, as well as the Soma, which Ptolemy Soter built to receive the remains of Alexander the Great. This was in temple-form with porticoes surrounded by columns. The following Ptolemies all contributed to the beautifying of the city with public buildings. The entire city and the citadel were dominated by an artistically-designed terraced pyramid which contained a grotto dedicated to Pan. A serpentine passage led to the summit. The entire structure was incontestably designed after the Chaldæo-Assyrian model. Asiatic influence is also evident in the vaulting of the houses. Such vaulting occurred in the Assyrian buildings, which were only a few centuries older. We meet with it again in the ruins in Central Syria, several centuries later, and it is still conspicuous in the Orient.

Vaulted Construction.—The Greeks were indeed previously acquainted with vaulted construction; they had seen it in Asia, and furthermore they could not have been strangers to the works of the Etruscans. Though they did not adopt it into that sacred language of forms which, based on an ancient tradition, they developed in their temples, they showed their knowledge of it as soon as they turned their attention to buildings devoted to the needs of life. We know that the Romans manifested a predilection for Grecian architecture, and they would certainly not have employed the vault in a manner so extensive and so magnificent had it been opposed to the spirit of Greek profane architecture in the same way that it was opposed to the spirit of Greek temple-construction.

ities ended in a gable. Some temples which have an entrance-hall with two columns, but no surrounding colonnade (*pl. 6, figs. 10, 14*), are called *ædes in antis*. Those surrounded by a colonnade (*figs. 3, 5, 6, 7*) were called *peripteros*; if there were two rows of columns, they were called *dipteros*. When a single row of columns occupied a double width, so that the plan was similar to that of the *dipteros*, the arrangement was called *pseudodipteros*. When a portion of the *cella* was parted off at the rear (*fig. 1*), this separated part was called the *opisthodomos*. The *cella* contained the image of the god, which, together with a small sacrificial altar and the sacred gifts, was elevated upon a throne at its rear extremity. In the *pronaos* stood a shell with holy water, with which each worshipper, as he entered bearing an offering or a sacrifice, sprinkled himself as a sign of the inward purification. The *posticum* was the receptacle for the golden ornaments and precious objects of the public treasure, as well as for the sacred utensils reserved for great festivals.

In large temples the *cella* is divided into a nave and two side-aisles by rows of columns, which latter bear a gallery. The nave is in this case lighted by an opening in the roof; such a structure is a *hypæthral* temple (*pl. 7, fig. 4*). But, though in its interior the temple contained different halls of varying size and for diverse purposes, this arrangement was not evident on the exterior. The established form of the temple had become to a certain extent holy, and the Greek language of forms recognized only the accustomed simple shape as that of the temple; so that the exterior in no way expresses the interior arrangement.

Doric Order.—When we describe the superstructure of the Doric temple, we must first of all notice the careful proportioning of the somewhat tapering columns, which were set upon the substructure without a base. The shafts were fluted, and the blocks which composed them so interlocked that the joints were entirely invisible. A strongly projecting roll-moulding (*echinus*) formed a simple capital, which supported a square slab (*abacus*). The simple lintels (*architrave, epistyle*) stretched from column to column without any detail. Over them, separated by a small moulding, stood the frieze, which was composed of a number of larger projecting blocks called *triglyphs*, the spaces between which were filled with thinner slabs, called *metopes*, usually adorned with carving. Above the *triglyphs* was placed the crowning cornice (*geison*), formed of thick projecting slabs, which supported the margins of the roof and was adorned upon its inclined lower surface, above each *triglyph* and *metope*, with slightly-projecting ornaments (*mutuli*), to which, three or six in a row, cylindrical drops were appended. Above this was the gutter (*cyma*), behind which the rain-water collected and was conducted to the four angles of the structure, whence it flowed through spouts in the form of lions' heads. The inclined lines of the pediments expressed the shape of the roof; along them extended the cornice and the *cyma* in a somewhat modified form. The triangle thus enclosed (*tympanum*) was adorned with sculptures, and sculptured *acroteria* stood upon the summit and both

extremities of the pediment. The roof was of stone slabs, the imbricated junctions of which were covered with curved tiles corresponding with the palm-like ridge and end tiles upon the ridge of the building and over the cornices. It is believed that the whole was richly adorned with bright but harmonious coloring.

The ancient wood structure is yet perceptible in the monumental stone edifice—of course not in the sense that each single form was existent in the rude wooden structure in the place in which we find it, with all the refinement imparted to it by the language of form, but in the sense that the outward form is in the main similar to that of the wooden temple, and that the constructive ideas were derived from the latter. From the temple of wood came the sacred traditions which passed over to the temple of stone. Even the form of the temple continued through all the ages as a sacred tradition—a form not necessarily linked to a complicated group of buildings, existing even where there is but a simple cella and portico, but which in a complicated group of buildings necessitates the omission of a part of the roof. Notwithstanding the delicacy of the lines, we can yet see the tree-trunk in the column, so plainly is the wooden origin evident in single forms. For the triglyphs we can find no other parentage than the fastenings of the ends of the beams, which in the wooden building projected upon the long sides of the rectangle, and were also represented on the ends of the building by short pieces.

Although in the monumental building the stone-linteled roof of the portico lies higher and is differently constructed in front, it is still a reminiscence of the wooden building. The mutules are survivors of the formerly-visible ends of the rafters, although in the monumental building they occur upon the ends of the structure as well as upon the sides, where alone real rafter-ends could occur. Plates 6 and 7 give a number of Doric temples, while Figures 6–9 of the latter Plate give the details of columns and entablature.

Ionic Order.—The Ionic temple is more elegant than the Doric. The columns have more slender proportions; the architrave is lighter. The Ionic column has a base in which various mouldings find application. One of these forms—that called the Attic—was adopted by all the later schools of architecture. The delicate shaft has narrow deep flutings, alternating with fillets; the neck of the column is enriched with an ornamental frieze; between the echinus and the abacus lies a cushion rolled into volutes upon both sides; the abacus is enriched, as is also the architrave, which is divided into three faces; the frieze, of less height than the Doric, may be plain or adorned with carving, and the cornice is set with dentils.

The entire order certainly does not exhibit a finer sense of proportion than the Doric, which, in fact, displays an unsurpassable refinement in the arrangement of its lines; yet the Ionic has greater softness and richness of details. It may be compared with the Doric as feminine beauty with masculine strength. The Ionic bears also in its entire aspect some-

thing of the Asiatic, for in it crops out a feeling similar to that which breathes in the columned structures of the Persians, though the latter knew not how to bestow upon it the same artistic delicacy. The proportionally wider spacing of the columns and the laterally projecting capitals are related to the Persian cycle of forms, and the traditions of timber-construction are similar to those which appear in the Persian porticoes, and differ from those apparent in the Doric temple. As we trace the volute back to its prototype in the uprolled shaving of wood, so can we trace, though its long wandering scarcely permits us, the form of the early Asiatic or Pelasgic wooden column to the marble column of the Erechtheion. A certain sanctity gives to tradition the power to preserve remnants of the primitive expression.

Works of the Sixth Century B. C.—After the above-mentioned oldest monuments of the Doric order, we come upon works which are of the highest artistic completeness, and which are described to us by the old writers as the pride of Greece, and of the architectural history of which enough remains. The works of the sixth and the beginning of the fifth century B. C. have still an uncommon austerity. In Greece itself and in the Grecian colonies of Lower Italy the Doric order rules, and even in Asia Minor it is almost exclusive. It was probably about the middle of the sixth century B. C. that the Temple of Hera at Samos was erected by the architects Rhœkos and Theodoros of Samos, who are also mentioned as famous bronze-founders. It was about 100 metres (328 feet) long.

Temple of Artemis.—Still larger was that most immense of Grecian buildings the Temple of Artemis, or Diana, at Ephesos, which was probably commenced about this time by Chersiphron and his son Metagenes, but was not fully completed until after two hundred years by the architects Demetrios and Paionios. This temple was a dipteros with eight columns on the ends, and measured 220 feet in width by 425 in length. Crœsus is said to have presented this temple with monolithic marble columns, and all the Greeks of Asia Minor contributed toward the expense of its erection. Not merely its artistic perfection, but also the overcoming of technical difficulties—the construction of the foundations on marshy ground, the raising and transport of the enormous cylinders of the columns, which were about 20 metres (65 feet) in height, and of the lintels, which were more than 10 metres (33 feet) long—excited the wonder of contemporaries, who followed the erection of the structure with admiration and interest; so that Chersiphron wrote a work concerning this temple which Vitruvius quotes. It is similar to another work which Theodoros composed upon the Temple of Hera which was carried out under his direction at Samos.

Temples of Apollo and Zeus.—The celebrated Temple of Apollo at Delphi was built in the second half of the sixth century by the contributions of the whole of Greece; Spintharos of Corinth is mentioned as the architect. The priestly family of the Alkmaionidæ directed the construc-

tion, and gained great fame because they employed Parian marble, whereas their contract only obliged them to use sandstone. Famous also is the Temple of Zeus at Athens, which was commenced under Peisistratos by the architects Antistates, Kallaischros, Antimachides, and Porinos, yet remained unfinished until the Emperor Hadrian completed it.

The Older Parthenon, upon the Acropolis—a peripteral temple of eight columns on the front and sixteen on the sides—though certainly of smaller extent, was yet famed as the more complete work of art. It was destroyed by the Persians, but enough of the old arrangement has recently been discovered beneath the later building to allow, in conjunction with fragments found in the ancient wall of the citadel, a spirited restoration to be made, and also to show that it was never entirely completed.

The Temple of Athena at Ægina was probably built after the Persian war, yet still in the earlier half of the fifth century B. C. It is a hypæthral peripteros of six columns by twelve, about 14 metres (46 feet) wide by twice that length. Two rows of five columns (*pl. 7, fig. 7*) part the cella into a nave and two aisles. The structure was partly of marble, and partly of sandstone covered with stucco. A temple *in antis* is that of Themis at Rhamnos.

Works of the Fifth Century B. C.—In Lower Italy and Sicily there are also a great number of Doric temples belonging to the fifth century B. C.; among the most ancient are two temples at Syracuse. On the island of Ortygia have recently been found the remains of a Temple of Artemis, a peripteros of six columns by eighteen. The Temple of Athena at Ortygia was a peripteros of six columns by fourteen. At Selinus yet remain the ruins of six peripteral temples.

Temple of Olympian Zeus.—At Agrigentum are the ruins of several temples, of which that of Olympian Zeus (*fig. 5*) is especially interesting because the columns are not detached; but the temple is enclosed by a wall to which half-columns are attached, seven in front and fourteen on the longer sides: these carry the entablature. So firmly established was the conception of a temple as a sacred tradition that the portico was here carried up as an attached screen, though the necessities of the construction demanded the erection of enclosing walls. The pediment was formerly decorated with statues, one series representing the battle of the gods with the giants, the other the surrender of Troy. The interior is divided into a nave and two aisles by two walls set on each side with pilasters; the upper part of these walls bears figures of giants. The dimensions of this temple are 104 metres (340 feet) by 52 metres (170 feet), and the height reaches 36 metres (118 feet). This temple had not been finished at the time when the city was destroyed by the Carthaginians, in the year 400 B. C.

Not much smaller was the Temple of Zeus at Selinus, a pseudodipteros with eight columns in front and seventeen along each side, each column nearly 15 metres (49 feet) high by 3 metres (10 feet) in diam-

eter at the bottom, and about 2 metres (nearly 7 feet) at the top. This temple also was left unfinished through the destruction of the city by the Carthaginians.

Temple of Poseidon.—The ruins of several temples are still extant in Poseidon's city of Pæstum (Poseidonia). The most important is that of Poseidon (*pl. 6, fig. 7; pl. 7, figs. 1, 2, 6*), a dipteros of six columns by fourteen—smaller, indeed, than the great temples just described, but nevertheless impressive through the earnestness of its simple forms and the harmony which reigns throughout. The interior is divided into a nave and two aisles by columns, and there is a second row of columns upon the first. The centre of the roof was open. This is, on the whole the most complete Greek temple now existing, and, judging from other specimens of the Doric style, can hardly be later than 500 B. C.

At Metapontum, upon the Gulf of Taranto, are still standing the ruins of two temples, one of which is remarkable because it shows fragments of a former richly-painted covering of baked clay.

Architecture of Athens.—In Greece, particularly in Athens, architectural activity received a new impulse after the close of the Persian war. Themistokles, and after him Kimon, restored the partly-destroyed walls, and by means of the "long walls" united the fortifications of Athens with the harbor of Peiraieus and the citadel of Munychia. Kimon built at the north-west end of the market-place a magnificent hall the wall-paintings of which celebrated the heroic deeds of the Athenians; he also erected the Temple of Theseus at Athens (*pl. 6, fig. 5*) of the Doric order, and a small temple in the Ionic on the Ilissos; also, probably, the small Ionic Temple of Nike Apteros (the Wingless Victory) in front of the Propylæa.

Under Perikles, Athenian art reached its climax. He finished the fortifications commenced by Themistokles and Kimon, built the Odeion, dedicated to the Muses, and restored with the utmost magnificence the sanctuaries on the Acropolis, which had been overthrown in the Persian war.

New Parthenon.—Above all, Perikles must be credited with the erection of the new Parthenon (*pl. 6, figs. 1, 2; pl. 7, figs. 3, 8*), that noblest and most harmonious of Doric temples, which the architects Iktinos and Kallikrates completed in the year 438 after sixteen years of labor. As is shown in the view of the Acropolis (*pl. 6, fig. 12*), the structure rises high above the walls, dominating the entire group of buildings. It is even to-day—at least, in its exterior—except the Temple of Theseus, the best-preserved and most complete Grecian structure, and is distinguished both by the nobility of its proportions and by the delicacy of all its forms. It is a peripteral temple of eight columns by seventeen, 69 by 31 metres (226 feet long by 101 in width). The interior, indeed, does not now permit the ancient architecture to be clearly recognized, and the sectional view (*fig. 2*) rests only on conjecture. As in no case does the hypæthral arrangement of a temple now exist in a complete state, the

attempted restorations differ widely from one another, and it may perhaps be questionable whether the arrangement corresponds to that shown on Plate 7 (*fig. 4*).

The Propylæa.—Perikles also built the Propylæa on the Acropolis (*pl. 6, figs. 11, 12*)—that noble work in which temple-architecture was applied to a partially profane purpose; for, though the Propylæa formed a portion of the ramparts of the Acropolis, it yet constituted the entrance to the sacred temple-enclosure. As the entrance to the sanctuary, it was necessary that it should wear a sacred form, and as the gateway to the majestic buildings which adorned the Acropolis it had to be a noble work of art. The architect, Mnesikles, executed the work in 437–433 B. C. Although the exterior is Doric, the interior has Ionic columns. The splendid ceiling of the hall excited the highest admiration of contemporaries by its immense lintels and its rich sculptural and painted adornment.

The Erechtheion.—The Ionic order attains its greatest elegance in the Erechtheion, a small temple also situated on the Acropolis (*pl. 8, figs. 1–3*), a picturesquely irregular group having a small temple upon each side of a central hall. Commenced just after Perikles's time, it was not, according to an inscription, completed in 409 B. C. In more ancient times there here stood a place of worship enclosing the wooden image of Athena which fell from heaven, as well as that goddess's sacred olive tree and Poseidon's salt-spring, called into existence by these deities in a friendly contest of power. The ground-plan and the section (*pl. 6, fig. 8; pl. 8, fig. 3*) are given according to Hansen's restoration. Under the great hall, the roof of which is borne by Ionic columns (*fig. 4*), are seen the trident and the sacred spring. From the temple access was obtained in the rear to a smaller portico, the roof of which was borne by six female statues (*caryatides; fig. 5*). This small temple is usually considered as the sanctuary of the nymph Pandrosos. According to Hansen's opinion, the middle part of the principal temple was open in hypæthral fashion, and in it grew the sacred olive, while the anterior room of the same temple was divided into three cellæ, of which the middle one was sacred to Athena and the lateral ones to Poseidon and the nymph Pandrosos respectively.

Other Temples.—Among non-Athenian buildings which were erected at this date is the Temple of Nemesis at Rhamnos (*pl. 6, fig. 10*), which, although it remains uncompleted, comes nearest in the fineness of its proportions to the works upon the Acropolis. In Thorikos, on the east coast of Attica, are the remains of a building which, notwithstanding its peristyle, may have served ends other than those of worship. It has seven columns in front, but the centre intercolumniation and the two middle ones of the fourteen columns on the longitudinal sides are wider than the others. The interior arrangement is not preserved. Perhaps the Propylæa and Temple of Athena at Sunion, as well as that of Demeter at Eleusis, are of this date (*pl. 8, fig. 16*). The latter is a structure of very peculiar plan, begun by Iktinos, architect of the Parthenon. It is a large

square hall divided by four rows of Doric columns, which were erected by Koræbos, into five aisles, the centre one of which, about 20 metres (65 feet) wide, had an open roof, while above the four side-aisles rise upper series of columns, erected by Metagenes; Xenokles constructed the roof. Although quadratic in plan, the arrangement of the aisles is such that they have a longitudinal direction, and so the face upon which the entrance is placed must be considered as the longitudinal side.¹ In the year 318 B. C., Demetrios Phalereus added a portico of twelve Doric columns.

Iktinos also built (430 B. C.) the Temple of Apollo at Bassæ, near Phigalia (*pl.* 6, *fig.* 6), a peripteral Doric temple of six columns by fifteen, 14 metres (46 feet) wide and 38 metres (124½ feet) long, the walls of whose cella enclosed Ionic half-columns on their interior faces (*pl.* 8, *fig.* 12). A single column—which probably bore a votive offering—has a richly-decorated capital (*fig.* 13). Little remains of the great Temple of Zeus at Olympia built by Libon, and which, though similar in dimensions to the Parthenon, had only six columns in front and fourteen on each side; yet enough is left to enable us to reconstruct the exterior (*pl.* 6, *fig.* 4), while the interior, with its colossal statue wrought by Pheidias, had, according to a wall-painting in the new Museum at Berlin, the appearance shown on Plate 7 (*fig.* 4).

About five miles from Epidauros stood a famous Temple of Asklepios in a thickly-wooded grove in a beautiful valley between two mountains. This temple was distinguished for its splendor, and bore the inscription, "Let only pure souls enter here." Some of its foundations can still be traced. The great theatre by the sculptor Polykleitos at Epidauros is the best-preserved ruin of its kind in Southern Greece.

At the close of the fifth and beginning of the fourth century B. C. the Athenian sculptor Skopas built the Temple of Athena at Tegea, which, according to Pausanias, had Ionic columns externally, while in the interior the Corinthian order surmounted the Doric. This is the first appearance of a new order with a tall, rich capital adorned with leaves, slender shafts, and an entablature still richer and more elegant than that of the Ionic.

Works of the Fourth Century B. C.—To the fourth century belong the great theatre of Megalopolis and that of Messene. The former, which Pausanias regarded as the largest in Greece, was elliptical, with a circumference of fifty stadia; its ruins are still well preserved. The latter was surrounded with magnificent walls of ashlar-work with numerous round and rectangular openings; its stadium, with its Doric porticoes, is in great part still extant.

The Temple of Apollo at Miletos was a dipteros of ten columns by twenty-one, commenced in the beginning of the fourth century by Paionios of Ephesos and Daphnis of Miletos, yet was scarcely finished at

¹ Fergusson's plan shows the reverse of this. The entrance is at the end of the central nave, as is usual.—ED.

the end of the century. The Ionic order was employed externally, while interiorly the cella was adorned with pilasters having capitals of various styles; near the entrance stood half-columns with Corinthian capitals (*pl.* 8, *fig.* 15).

The Temple of Athena at Priene must also be referred to this date; it was built about 340 B. C. by Pytheos, and was consecrated by Alexander the Great. It was an Ionic peripteros of six columns by eleven (*fig.* 14).

Mausoleum of Halikarnassos.—In Asia Minor the Greek culture came into contact with the Asiatic. If in the Ionic order we recognize a series of Asiatic elements permeated by the Greek spirit, we must not think it strange if other Asiatic elements recur. Thus a work which in its day was widely famed, and which has given its name to a whole class of monuments, was linked to Asiatic traditions. This was the tomb which Artemisia in the year 354 B. C. erected to the memory of her husband, Mausolus, king of Caria, in their capital, Halikarnassos. The monarchy had more relations to the Asiatic than to the Greek civilization, and so the monument assumed the arrangement of the many-staged pyramids of Assyria and Babylonia. Both in its execution and in the proportion of its details it is one of the noblest of Ionic buildings. The architects were Pytheos and Satyros, the former of whom designed the Temple of Athena at Priene, and the sculptures are ascribed to Skopas, Bryaxis, Timotheos, and Leochares. A substructure of five stages, 36 metres (118 feet) long and 27½ metres (90 feet) wide, enclosed the burial-chamber. Upon this stood a cella surrounded by an Ionic peristyle of nine columns by eleven. A pyramid of twenty-four steps, which upon its uppermost stage bore a chariot with the colossal statue of Mausolus, crowned the structure. Constructive necessities seem to exact that the cella, upon which the weight of the pyramid rested, must have been vaulted. The work existed until the Middle Ages, but in 1402 A. D. it was destroyed, and the stone was removed to build a fort; yet so many fragments remain that there can be no doubt concerning its original form.

The Temple of Artemis at Magnesia, a pseudodipteros built by Hermogenes, is also Ionic, as is likewise the peripteral Temple of Dionysos erected by the same architect at Teos and the Temple of Aphrodite at Aphrodisias, a pseudodipteral structure of eight columns by thirteen surrounded by a peribolus with Corinthian columns.

The inner Propylæa at Eleusis is also Ionic. Yet even at this date we meet with the Doric order in the Temple of Demeter at Pæstum (*pl.* 7, *fig.* 9), but in a form unlike the solemnity and severity of the ancient period. The four columns of the pronaos have bases. The temple is peripteral, with six columns in front and thirteen on each side, and measures 14 metres (46 feet) by 32 metres (105 feet). The so-called "Basilica" at Pæstum is also Doric.

Choragic Monuments.—Athens has a number of interesting minor memorials in the choragic monuments which were erected by individuals for the display of the tripod which they and their choir had carried off as

the prize of a musical contest. Some bear the tripod upon a column, while others are built in the form of small temples. A street in Athens has so many of these memorials that it is named "Tripod Street." Perhaps the most beautiful is the choragic Monument of Lysikrates (*pl.* 8, *figs.* 10, 11), who erected it to commemorate a prize won in a musical contest in the year 334 B. C. Though much mutilated, it is in all its essential parts still extant, but is better known by the title of the "Lantern of Demosthenes" than by its own. The Monument of Thrasyllos (*figs.* 8, 9; 320 B. C.) is more like a temple-façade, yet simpler in form, and is allied in many ways to the Asiatic tomb-façades. Here a grotto on the south side of the Acropolis enclosed the tripod. The façade was destroyed in modern times.

Transition of Grecian Art.—The political independence of the individual Greek communities could no longer exist after powerful states began to develop in Europe and there had sprung into existence grand ideas of world-domination to fight for, and to sustain which great authority must be wielded. The Persian war was, in fact, a war of subjugation which had it been successful would have given the Persians a world-wide sovereignty, and which rendered necessary a stable Greek confederation in which the leadership of the other states should be given to a single one. The struggle for this hegemony marks the period after the Persian war until the Macedonians—a race dwelling to the northward, who until then had taken no part in Grecian development, and whom the Greeks even reckoned barbarians—acquired under King Philip (338 B. C.) the leadership of Greece.

Alexander the Great then conducted the Greeks into Asia, and there began once more a struggle for universal dominion in which the Greeks overthrew the empire of the Persians and carried their conquering arms even to India. Thus there was opened through Asia a way for Greek culture, which here began its world-wide domination. But there was also a relaxing of those restraints of delicacy, nobility, and harmony of form which until then had confined Grecian art within due bounds. While thus limited it reached a degree of perfection which previously it had not attained, and which has never been surpassed. The works of the flourishing period of Grecian art could not compare in area with those of Egypt or Asia, nor in fancifulness of appearance with the fairy-like fabrics of the latter; but Asia, while receiving the Greek culture, exercised an influence upon its further development through the introduction of new elements, and gave to it a soft voluptuousness and a heretofore unknown richness of forms.

Corinthian Order.—We have already followed the decadence of the Doric and the advance of the Ionic; henceforward we must follow that lavish application of ornament which was evidenced by the introduction of the Corinthian capital. But the extension of the power of Greece over Asia and the admixture of Asiatic forms with Hellenic also resulted in giving new purposes to Architecture. From this period it is

no more the simple cella containing the image of a deity: the palace equal in grandeur and magnificence to that of the Asiatic monarchies, and works of luxury of every kind, henceforward demand our notice.

Alexandria.—Alexander the Great built in Egypt the metropolis which bears his name, and which is perhaps the grandest example of a city deliberately outlined and immediately built up in full artistic completeness. Deinokrates, the first architect of his time, laid out the thoroughly-considered plan upon an excellently chosen site between Lake Mareotis and the sea. A magnificent harbor in the Mediterranean and a canal between it and Lake Mareotis, which served as a harbor for the Nile vessels, completed its connection with the outer world. The city was laid out in straight parallel streets and was intersected by two main streets, one of which, about 100 feet wide, ran westward from the Canopic gate to the Necropolis. The principal streets ran north and south, allowing passage to the fresh winds coming from the sea. Canals ran through the streets and conducted the waters of the Nile into the cisterns of the houses. The latter were exclusively of stone, with vaulted storeys and terraces instead of roofs.

Temples and Public Buildings.—Alexander himself erected the Temple of Poseidon, the theatre, with a stadium and hippodrome, a palace for the supreme court, and a gymnasium with extensive porticoes. The royal citadel, which included a fourth part of the entire city, contained, besides the royal palace, the museum with its porticoes and the world-renowned library and academy; to it also belonged the Tombs of the Kings, as well as the Soma, which Ptolemy Soter built to receive the remains of Alexander the Great. This was in temple-form with porticoes surrounded by columns. The following Ptolemies all contributed to the beautifying of the city with public buildings. The entire city and the citadel were dominated by an artistically-designed terraced pyramid which contained a grotto dedicated to Pan. A serpentine passage led to the summit. The entire structure was incontestably designed after the Chaldæo-Assyrian model. Asiatic influence is also evident in the vaulting of the houses. Such vaulting occurred in the Assyrian buildings, which were only a few centuries older. We meet with it again in the ruins in Central Syria, several centuries later, and it is still conspicuous in the Orient.

Vaulted Construction.—The Greeks were indeed previously acquainted with vaulted construction; they had seen it in Asia, and furthermore they could not have been strangers to the works of the Etruscans. Though they did not adopt it into that sacred language of forms which, based on an ancient tradition, they developed in their temples, they showed their knowledge of it as soon as they turned their attention to buildings devoted to the needs of life. We know that the Romans manifested a predilection for Grecian architecture, and they would certainly not have employed the vault in a manner so extensive and so magnificent had it been opposed to the spirit of Greek profane architecture in the same way that it was opposed to the spirit of Greek temple-construction.

Alexander founded seven cities in Babylonia, Persia, and India, but of these cities, as of ancient Alexandria itself, nothing now remains.

Hephaestion's Tomb.—A work which the fancy of the Orient imposed upon Greek culture was the pyramid of many stages which Alexander, following Assyrian models, erected in Babylon as the tomb of his deceased favorite, Hephaestion. Diodoros has left us a description of this structure, which Deinokrates raised to a height of 130 ells at a cost of twelve thousand talents. Upon a substructure of brick it held thirty chambers, the roofs of which were built of palm-stems. Around were two hundred and forty golden prows of ships decorated with colossal statues of kneeling archers and standing warriors. The second storey was adorned with torches 15 ells high, which were ornamented on the handles with golden wreaths, on the flame with outstretched eagles, and on their bases with dragons, which reared their heads against the eagles. The third storey was bedecked with sculptures of the chase; the fourth displayed in gold a battle of centaurs, while the fifth bore golden lions and bulls placed alternately. On the highest stage were arrayed the weapons of the Macedonians and of the conquered barbarians, and the summit was crowned with statues of sirens, which were hollow, so as to contain the persons who sang the funeral dirges.

In this description it is impossible to recognize a funeral pyre, although Diodoros uses the word *πυρ*, for the preparation of the structure demanded considerable time. Diodoros describes also a thick, purple-dyed drapery, so that in this structure of a later date we have an imitation both of the tapestry covering and of the outward form of the Babylonian works.

A similar fantastic work was the great golden chariot which bore Alexander's remains from Babylon to Egypt. Alexander's universal empire did not outlast his death, but the love of display and the luxury which he introduced into Grecian life remained under his successors, who ruled the Greek kingdoms founded upon the ruins of the empire. Magnificence and luxury became more and more rife in Greece itself and in the Greek colonies in Italy, and buildings everywhere arose.

Theatres, Stadia, etc.—We may here mention the various theatres—great open, semicircular, unroofed edifices spread out in front of a roofed stage. Portions of these structures exist at Iasos, Argos, Sparta, Mantinea, and Megalopolis, the last capable of containing forty thousand spectators, also at Delos, Sikyon, Melos, Telmissos, Assos, Aizanis, Pessinous, Syracuse, and Segesta, as well as the famous recently-excavated Theatre of Dionysos at Athens. To the theatre was allied the Odeion, of which the one built by Perikles at Athens has already been mentioned (p. 67). Others are at Aperlai, in Asia Minor, and at Agræ and Catania, in Sicily. Ruins of stadia also occur at Iasos, Aphrodisias, Ephesos, and Sikyon, and remains of the stadium at Athens have very recently been discovered. Hippodromes are found at Pessinous, Aizanis, etc.

We have given here the greater number of existing remains of the days of late Grecian art, although the plans of many reach back to an

earlier date. Athens had, in fact, lost its political importance; art no longer centred there, but was at home everywhere in the empire of Alexander and the Alexandrians. The princely courts drew to themselves rhetoricians and philosophers, yet the ancient fame of Athens ever remained, and what the Athenians themselves could not perform was done by stranger-princes who were inspired by her fame. Ptolemy Philadelphos built a magnificent gymnasium, Attalos I. built in the Kerameikos a hall for promenading and public assemblage, and Eumenes of Pergamum added a spacious portico to the Theatre of Dionysos.

The Tower of the Winds.—A monument of this later period of Grecian art is the so-called "Tower of the Winds" (*pl. 6, fig. 9; pl. 8, fig. 6*), or the Clock of Andronikos Kyrrhestes, an octagonal building with two small porticoes supported by columns, and a semicircular apse. The figures of the eight winds are carved under the cornice, upon a frieze, and under these, upon the walls, are the lines of a sundial, while a Triton upon the roof with a javelin in his hand serves as a vane. The capitals of the columns of the porticoes show an elegant calyx-form, and consist of a row of grasslike leaves with a series of acanthus-leaves below (*fig. 7*). The little building contains a clepsydra, or hydraulic clock, the water for which flowed through an aqueduct borne upon a row of columns connected by semicircular arches. Part of these still remain, and show how the Greeks in their later days not only adapted to profane purposes forms which they had taken from their temple-architecture, but also used them in connection with vaulted construction.

2. ROMAN ARCHITECTURE.

The Greeks recognized no culture besides their own; all other races were barbarians. As such they looked upon the Macedonians, notwithstanding their widely-extended empire, and though it was through them that the world was opened to Greek culture and manifold new forms were introduced into Grecian art; hence impotent attempts to free themselves from Macedonian domination. Nor did the Macedonians long retain their empire: another mighty people, occupying Italy—a people who by perpetual wars had won their own freedom and extended their sway, a people whose vocation was not the exercise of art, but that of battle and sovereignty—overthrew the Macedonians. Macedonia itself was made a Roman province 146 B. C., and two years later Greece fell also into the hands of the Roman barbarians.

Early Period of Roman Art.—The Romans had previously employed Greek artists, so that, though Etruscan art was at first dominant upon their soil and their historians say that in early days all was Etruscan, this was quickly superseded, and later all was Grecian. They themselves had no desire, no talent, for the cultivation of art. Not that artists never arose among them, but that all learned in the Greek school and desired to be Greek artists. Virgil, the most illustrious poet of an age which may

be considered the most flourishing in Roman history, allows Anchises, while expatiating upon the greatness of Rome, to say:

"Let these letters mould the running mass
Of metals, and inform the breathing brass,
And soften into flesh a marble face;
Elevate better at the bar; describe the skies,
And when the stars descend, and when they rise.
But, Rome! thy throne alone with awful sway
To rule mankind and make the world obey,
Disposing peace and war thy own majestic way."¹

But, though the Romans did not practise art, they desired to patronize it. Foreign cities were compelled to give up their cherished treasures, as happened to Corinth when conquered and destroyed (148 B. C.), and also to other ancient art-centres of Greece. Greek artists were directed to build in Grecian manner Roman works proclaiming the fame of Rome; for of all foreign peoples the Greeks were the only ones to whom the proud Romans did not give the name of barbarians. Thus in the works of the Romans we have but the continuation of those of the Greeks. Doubtless many links are wanting. Nothing remains of the works of the Alexandrians, and the prodigality and luxury of later Rome destroyed the older Roman productions; so that what remains belongs to a later age. We are compelled to pass over almost two hundred years and their developments; and among a people susceptible as were the Greeks, and at the same time spurred on by the grand ideas of the Romans, what must two hundred years have produced! Thus we cannot tell at what date many patterns which were pre-existent in Etruscan art were received into the Grecian. We know, however, that vaulted construction belongs to the fourth century before Christ, probably to its commencement, though it was as yet not employed in the building of temples.

But the magnificent results which Architecture then produced could no longer find expression within the narrow circle of forms which the temple-architecture of the fifth century B. C. had established. Vaulted construction particularly, made visible exteriorly in the form of arches, obtained extensive application for profane purposes. Temple-architecture next adopted the scheme that had been derived from it, especially since the so-called "Corinthian" order enabled it to combine richness and elegance with imposing dimensions.

Temple of Zeus at Athens.—We must now notice a single work in Greece dating from about the era when that country fell under the power of Rome—namely, the restoration of the unfinished Temple of Zeus at Athens (begun in the palmy days of Greece) by Antiochos Epiphanes, King of Syria (175–163 B. C.), under the direction of the Roman architect Cossutius; it was a dipteral structure corresponding to the original plan, yet with Corinthian columns. The edifice was not then entirely completed, but was finished by the Emperor Hadrian. On Plate 9 (*fig. 3*) we

¹ Dryden's translation, *Æneid*, vi. 1168–1175.

give a view of the ruins, and in Figure 4 a restoration of the façade, from which it is evident that even in this late age the fundamental form of the temple had not changed.

About the year 150 B. C. the outer propylæa of the Temple of Demeter at Eleusis were erected in tolerably close imitation of those of the Acropolis at Athens.

Temple of Jupiter Stator.—About this time there began a period of great constructive activity at Rome, and to this age must be referred the Temple of Jupiter Stator, which Q. Metellus Macedonicus built of marble according to the Grecian style. Within the same peristyle rose a prostyle dedicated to Juno; both temples were adorned with Greek statues.

Aqueducts, Bridges, and Arches.—Next follows a series of utilitarian structures which are allied to those of the Etruscan period. In them skilful construction rather than external appearance was considered; so that they do not bear the stamp of any special style. The Marcian Aqueduct (*Aqua Marcia*), thirty-eight miles long, was constructed in 143 B. C.; for about six miles of its extent it was carried upon nearly seven thousand arches. The *Aqua Tepula* was constructed in 127 B. C. on the same series of arches that carried the *Aqua Marcia*, but at a higher level. About the year 142 B. C. the arches of the *Pons Palatinus* (Ponte Rotto) were constructed. The *Pons Milvius* (Ponte Molle) was built in 126 B. C. Many triumphal arches rather plainer in style were also erected about that time, of which the one built upon the Via Sacra about 120 B. C. in honor of the victory of Fabius Maximus over the Allobroges remained standing for a long time. In the course of the second century the Basilica Porcia, built by M. Porcius Cato in 184, and the Fulvian, Sempronian, and Opimian basilicas, were built. Upon the form of the basilica we shall have something more special to say farther on.

Temple of Hercules.—In Pompeii there yet stands a Doric peripteral temple of decidedly Hellenic design, known as the Temple of Hercules. It stands upon a triangular plaza surrounded by Doric columns and entered from an Ionic portico. The Forum at Pompeii was surrounded with a Doric colonnade the execution of which exhibits in its decoration an entirely degenerate series of forms. An Ionic portico rises above this.

Roman Tombs.—Arched gateways—simple semicircles without any special richness of composition—gave entrance to the city (Pompeii). A line of tombs rose beside the "Street of Tombs," without the city (*pl.* 9, *fig.* 8). Some are sarcophagi or altar-like compositions adorned with pilasters or attached columns, some of the Hellenic form of the third century B. C., and some in that phase of elaboration which is usually called Roman, but which is only a broader interpretation of Hellenic art.

Similar streets of tombs stretched out beyond the gates of every city. Rome itself had in the *Via Appia* a most extensive addition of this kind, and in other places a series of similar monuments, some of which are of importance. One of the unique tombs of this age is that of the baker Eurysaces, outside the Porta Maggiore; it is built mainly of stone mor-

tars such as were used by the bakers for kneading dough. The Tomb of C. Publicius, in the Bibulus, now the Via di Marforio, upon the eastern side of the Capitol, has the form of a small temple with Doric pilasters. One of the most magnificent sepulchral monuments is that of Cæcilia Metella, on the Via Appia, which has a cylindrical superstructure about 24 metres ($78\frac{3}{4}$ feet) in diameter upon a square base. A frieze of bulls' heads and festoons with a simple but effective cornice terminates the cylindrical portion. The summit formerly consisted of a pyramid or cone. This tomb is well known through Byron's beautiful stanzas in *Childe Harold*, the first of which is as follows:

"There is a stern round tower of other days,
Firm as a fortress, with its fence of stone,
Such as an army's battled strength delays,
Standing with half its battlements alone,
And with two thousand years of ivy grown,
The garland of Eternity, where wave
The green leaves over all by Time o'erthrown;—
What was this tower of strength? within its cave
What treasure lay so locked, so hid?—A woman's grave."

The Temple of Jupiter Capitolinus was burnt in the year 83 B. C., and was rebuilt by Sulla. The power of traditions made sacred by religion was still so potent at Rome that though Grecian art had there become acclimated, and though the forms previously deemed sacred to temple-architecture had in their new home long been applied to all the purposes of ordinary life, yet the Etruscan forms revered by the Romans were adopted in this temple.

Characteristics of Later Roman Art.—But neither at Rome itself nor in the extensive realms over which it ruled were temples the most splendid examples of Roman architecture. When, toward the close of the Republic, immense luxurious buildings were erected in which storey towered over storey, in which neither the simple ground-plan of the temple nor its dimensions could be made serviceable, in which its delicacy of form no longer found application; when the character of the building could no longer be expressed exclusively by colonnades, but by stupendous wall-masses to which life must be given by a wealth of detail,—then it became necessary to connect by means of arches piers formed out of the walling. To break up and give life to these piers, a system of columns and entablatures was applied as an external covering. The columns no longer had really to bear the entablatures: this work was performed in a greater degree by the walls; therefore the intercolumniations were widened until they approached Etruscan proportions.

Tuscan Order.—The details, used more for effect, lost the Grecian refinement of proportion; the delicate and energetic line of the Doric echinus was no longer expressive, the tapering shafts of the Doric columns stood in too severe a contrast to the perpendicular lines of the piers, and the absence of a base could in a many-storeyed building no longer be made to express energetic strength; and thus the Doric order

was in a sense worked over and the Etruscan or Tuscan formed out of it. In lofty storeys parapets between the piers and arches were necessary. These on the one hand, and on the other the purpose of the structure, made it allowable to lighten the forms of the applied architectural frontispiece. Thus the columns became more slender and the entablatures less heavy; in many cases the column did not reach the full height of the storey, but were furnished with a *stylobate*, or pedestal reaching to the level of the parapet.

Thus storeys were built one over the other, and the modified Doric order applied to the lowest, the Ionic to the next, and the Corinthian to the third (*pl. 10, fig. 6*). This system is usually considered Roman, and is contrasted with the Grecian—properly so, in the sense that the Greeks were no longer the ruling race, that their centres of influence were not in Greece, but that it was imperial Rome that decked herself with these monuments; but yet improperly so, since Greek masters and the Greek spirit erected those works for the Romans, and since every deviation was not a departure from the Greek sentiment of form, but was based upon the necessities of the purpose. We do not see the union of Etruscan and Grecian architecture into a specific Roman style, but a wider phase of the Grecian, or, if we wish to use another term, of the classic. The influence of the Etruscan was so small that it cannot be considered as transforming, and Etruscan art itself had been influenced by the Grecian in its development. Grecian construction was as well acquainted with the vault as was Etruscan. Both may have derived it from the same Oriental source, with which the relations of the Greeks were certainly sufficiently near.

The Tabularium.—The Consul Q. Lutatius Catulus built the Tabularium (73 B. C.) on the southern side of the Capitol, opposite the upper side of the forum. This was the Hall of Archives and Treasury of the State, and consisted of a base 10 metres ($32\frac{3}{4}$ feet) in height, upon which stood a magnificent arcaded portico, the piers of which were set with Doric half-columnus, while above the arches ran a Doric entablature with four triglyphs in each intercolumniation. The attached columns are simply faceted upon their lower third, but fluted on their upper two-thirds.

Theatres.—To the middle of the last century before Christ, when prominent men endeavored to gain power by flattering the people of the Capital, belong a series of magnificent structures which were erected for popular favor in the most costly manner—particularly theatres, which, though built of wood, had their stage-walls covered with ivory, silver and gold plating, and other more or less costly materials, while purple curtains spanned the auditorium. In 58 B. C., Marcus Scaurus built a theatre to contain eighty thousand spectators; in its costly decoration there were employed three thousand bronze statues and inlaid work of marble and gold. In 55 B. C., Pompey built the first stone theatre at Rome, seating forty thousand persons; above the seats rose the Temple of Venus Victrix. In 54 B. C., L. Æmilius Paulus constructed the Basilica Fulvia, and also the most stupendous structure of the forum, the Basil-

ica Emilia, which was completed in 31 B. C.; to this Cæsar subscribed a sum equal to about fifteen hundred thousand dollars. In the year 50 B. C. a partisan of Cæsar, C. Curio, built two adjoining theatres of wood, which served by day for the drama, but in the evening were revolved, with all the spectators, on pivots, so as to front each other, and thus formed an amphitheatre, the arena of which furnished new enjoyment to the people. In 46 B. C., Cæsar himself built a wooden amphitheatre covered with a silken canopy; he also constructed a *naumachia*—a colossal edifice arranged to form a huge artistic reservoir for the display of naval combats.

Temple of Venus Genitrix.—Another splendid structure built by Cæsar at Rome was the Temple of Venus Genitrix, the tutelary goddess of his house, to whom he gave honor at the battle of Pharsalia, in 48 B. C. This temple was dedicated in 46 B. C., as was also the forum which Cæsar constructed not far from the ancient Forum Romanum, and which bears his name. This forum is surrounded by colonnades; in its centre stands the temple, at its rear are apartments for the authorities, and on one side is the tribunal of justice. The completion of this edifice, as of another of Cæsar's structures, was reserved for Augustus.

Julian Course and Circus Maximus.—To this epoch belongs the erection of the stone Basilica Julia, as well as the construction of a second forum, a plaza five thousand feet square, on the Campus Martius, which until then had been little built upon. This forum was also surrounded by porticoes, and bore the title of Septa Julia (the "Julian Course"). To the epoch of Cæsar belongs also the rebuilding of the Circus Maximus—a structure which, according to the various statements of the age, must have seated from one hundred and fifty thousand to two hundred and sixty thousand spectators.

Bridges.—A well-preserved example of Roman bridge-construction is the Pons Fabricius (Ponte de' quattro capi; *pl.* 9, *fig.* 7) over the Tiber, built by L. Fabricius in the last years of the Republic, and enlarged by Augustus forty-four years later. The aqueduct near Volci (*fig.* 9) serves as both aqueduct and bridge.

Spread of Grecian Art.—Under Roman influence Grecian art perpetually extended its domain, since it not only held sway in Asia in the overthrown Alexandrian empire, but also penetrated where the political power of Rome had not yet accomplished the overthrow of the nations. Among these we must mention the Jews, who had no art of their own, but who, like the Romans, had adopted Grecian art. To this epoch belong the tombs which exist near Jerusalem, and which exhibit more or less barbarized Grecian forms. These are in part rock-graves—as the so-called "Tombs of the Kings," the "Judges' Tomb," "Jacob's Tomb," and that of "Helena"—and in part detached structures, as those of Absalom and Zacharias. These names are entirely arbitrary and in no wise characterize the date of the structures, which belong to the last century before Christ, and perhaps to the first century after. To this period also

belongs the restoration of the Temple, which Herod began to rebuild in the Greek style in the year 20 B. C. This is the Temple concerning which Christ said, "Seest thou these great buildings? there shall not be left here one stone upon another, which shall not be thrown down" (Mark xiii. 2); and it did not exist one hundred years ere the prophecy was fulfilled.

The Augustan Era (27 B. C.—14 A. D.) was for Rome what that of Perikles was for Athens—the full bloom of culture and the culmination of art, inasmuch as it was then treated with most elegance. And yet what a difference! How can we speak of refinement where mere size preponderated—where even architectural forms were converted into an outer decoration? Yet relatively it was the climax of art, inasmuch as the remains of the genius of the age of Perikles—a remnant which afterward disappeared—were not yet entirely lost.

Temple of Fortuna Virilis.—Among the temples of the last period of the Republic is the Ionic temple of Fortuna Virilis at Rome, the cella of which is set externally with half-columns that form a continuation of the columns of the entrance-portico, the architrave of which is carried along the wall of the cella; so that the entirety approaches that of an early Grecian temple, while it still bears sufficient traces of the old domestic temple-arrangement. Related to this is the Temple of the Sibyl at Tivoli.

Other Temples of this Period.—To the Augustan Age belongs the Temple of Mars Ultor, which closely resembled the Greek manner, and of whose peristyle three Corinthian columns with their entablature still remain. Augustus also restored the Temple of Jupiter Capitolinus on the Greek plan. To his time belongs also the Temple of the Dioscuri—generally entitled that of Jupiter Stator—of which also three columns with their entablature still stand erect (*pl. 10, fig. 11*). Outside Rome the Corinthian Temple of Augustus and Roma at Pola in Istria belongs to this period, also the similar Corinthian temple at Assisi (now the Santa Maria della Minerva), as well as the remnant of a temple built into the Cathedral of Pozzuoli, besides many others.

Circular Temple-structure.—The choragic Monument of Lysikrates (*pl. 8, fig. 10*) shows the architectural system of the temple applied to a circular building. Whether larger structures, actually used as temples, had at the time of its construction a similar form cannot be asserted, on account of the lack of remains; but the severity with which the sacred traditions of the form of the temple was established makes it, however, improbable. After the transference of sway to Rome we find this shape adopted for the temple, and the Temple of Vesta at Tivoli (*pl. 11, fig. 1*)—as yet in great part erect—is a striking example.

The Pantheon at Rome (*pl. 9, figs. 1, 2*) has also the circular ground-plan, which, unless the surroundings gave occasion for its simple solidity, probably bore previously an external decoration with rich and elegant forms, while its attached portico repeats the Grecian temple-system, and thus by reminiscence characterizes the building as a temple (*pl. 10, fig. 8*).

Erected in 27 B. C. by the architect Valerius of Ostia, it was originally dedicated to Jupiter Ultor, and formed part of the Baths of Agrippa.

Architectural Activity of this Period.—The reign of Augustus, who in matters of art and knowledge was himself one of the most illustrious men of his time, gave its name to epochs of high culture, and was for Rome a period of the most developed architectural activity. Augustus himself vaunted that he found a city of brick and left one of marble. We have mentioned (p. 80) that he completed the magnificent structures begun by Cæsar. The erection of new monumental public edifices stands in noticeable relation to the increase and constant development of the city. The public life of Rome exacted the extension of the sites set apart for these structures, and a forum which Augustus built bore his name.

Basilicas.—As the citizens gathered in multitudes under the open sky upon the forum to talk of public affairs and to execute their business, roofed and enclosed spaces for similar purposes became necessary. These were provided in the basilicas, the name of which bears witness to their Greek origin. They were essentially immense lofty halls divided by ranges of columns into a nave and several aisles and furnished with galleries above the outer aisles. The multitudes swayed to and fro in this ample space, while usually from a semicircular projecting addition upon one of the shorter sides, separated from the main room by columns, the judge dispensed justice, and was always at hand to settle litigation. Vitruvius, an architect of this period to whom we are indebted for his *De Architectura*—a very remarkable work upon architecture—describes in the first chapter of the fifth book the plan of basilicas in general, which should be built near the forum, in the warmest places possible, so that they could be comfortably occupied by the merchants in winter. The length should be twice or thrice the width. He describes a basilica built by himself at Fano which differed somewhat from the accustomed form, as an example of which he mentions that of Julia Aquiliana.

The Basilica at Fano had a nave 120 feet long by 60 in width. Columns 5 feet in diameter and 50 feet high, with capitals, separated the nave from the galleries, which were 20 feet wide. Piers 20 feet high at the back of these columns bore the joists of the galleries of the side-aisles, and above these piers rose again to the height of 18 feet, bearing the roof of the aisles, above which light was admitted into the nave below the architrave of the principal columns. The columns on the longer sides were eight in number, and on the shorter sides four, reckoning the angle-columns. Upon one side the two middle columns were omitted, so as not to hide the portico of the Temple of Augustus. The tribunal-niche was not semicircular, but segmental, and had a depth of only 15 feet, against a width of 46 feet. The most peculiar part of this basilica was the arrangement of the high columns which in front of the aisles bore the roof of the nave, while in other basilicas two rows of columns were superposed.

In Pompeii there is a basilica in which the tribune is not semicircular, but by an internal projection on one of the short sides is situated in the

gallery, which was here of double width. The attempted restorations also show here columns which extend the entire height, but without galleries over the aisles. Other basilicas remain at Aquino, Palestrina, Palmyra, and Pergamum.

Arches.—To the characteristic decoration of the Roman city belong the great arches (*pl.* 10), some of which were erected in especially conspicuous parts of the city as triumphal memorials in commemoration of glorious battles, while others formed entrances to the markets and commercial forums, and, as their façades faced both sides, were called "Arches of Janus." Arches were consecrated by Augustus at Susa, Rimini, and Aosta to commemorate his triumphs over the people of the mountains.

Theatre Marcellus.—From the last years of Augustus's reign dates the theatre, built in 13 B. C., to which he gave the name of his nephew Marcellus; it had a diameter of 110 metres (360 feet) and accommodated thirty thousand spectators. The existing remains of the outer walls show arcades the lower series of which is adorned with Doric, the upper with Ionic, columns.

Tomb of Augustus.—As Augustus was great and powerful, a magnificent tomb was erected to his memory. The tumulus gave the fundamental idea. A circular structure the diameter of which at the base was nearly 100 metres (328 feet), and the interior of which contained a multitude of vaulted chambers, formed a terrace, which was planted with trees, while upon the summit stood the colossal statue of the Cæsar. Within this not only Augustus but also many of his successors were laid away for their last sleep.

Architecture under the Later Emperors.—Under the successors of Augustus architectural activity went on uninterruptedly in Rome and throughout the extensive provinces of the empire, and we know that both Tiberius and Caligula erected imperial palaces at the Capital. Although the provinces were plundered that the splendor of Rome might thereby shine more brightly, there always remained opportunities enough to raise architectural piles in them also; and the high Roman officers, the administrators of the provinces, as well as the generals, took care that the luxury and sumptuousness of the Imperial City should not be altogether wanting in their provincial capitals.

Roman Cities.—The model of a provincial town in Italy has been well preserved. Pompeii, buried under the ashes of Vesuvius in 79 A. D., stands to-day an exact reproduction of what it was in the earliest period of the Empire.

Dwelling-houses.—What particularly interests us is the plan of the dwelling-houses. Figure 7 (*pl.* 10) gives a section of the one which is called the "Casa di Campionet," after its discoverer. The principal room is the *atrium*, the roof of which, sloping from all sides toward the middle, leaves in its centre an opening, the *impluvium*, which corresponds to an excavation on the floor-level, the *compluvium*, for the

reception of the rain-water. A short entrance led from the street to the atrium; between these were situated four smaller chambers, while there were other chambers between the atrium and a second court, which was probably planted with flowers and surrounded by a portico. A richly-decorated hall opening on both courts formed the principal communication. There were also cellars beneath the garden-court, smaller living-rooms above the part which joined the two courts, and an open gallery above the porticoes which surrounded the rear court. (See Vol. II. p. 206; *pl.* 31.)

Rich decorations adorned the walls, and the entire appearance wore so poetical an aspect that we are surprised at the high development of culture and the refinement of taste displayed. This house was evidently designed for one family only, probably a numerous one, which was served by a large staff of servants; and it is likely that in Rome itself convenience may have required arrangements similar to those in the lofty structures of modern cities, where many storeys give accommodation to a great number of unrelated tenants.

At all events, Rome must have had many closely-built and thickly-peopled quarters, and the speech of Augustus about a marble Rome must have been figurative. To remove these sections in the simplest manner, Nero set fire to the city, by which act several monumental public buildings were destroyed; for these, however, he made rich restitution. His "Golden House," a sumptuous palace such as before had not been seen in Rome, rose high over his other buildings.

Works of Vespasian.—Nero's successor, Vespasian, built at Rome the Triumphal Arch of Titus to commemorate the conquest of Palestine, accomplished in 70 A.D.

The Coliseum (*pl.* 10, *figs.* 5, 6), that stupendous amphitheatre, which, like the arch just mentioned, still remains, was also built by Vespasian. Elliptical in form, its ranges of seats are reached by passages in the substructure. Outside there are four storeys, the three lower of which have the customary pier-and-arch architecture with the half-columns and entablatures of the three orders. The fourth has an extraordinary height, out of harmony with the others; it consists of a mass of wall which bears heavily upon the arched architecture and is only brought into relation with the piers and half-columns below by means of a system of pilasters. Particularly characteristic is the series of consoles which runs around the entire building about midway up the height of this storey, corresponding to openings in the cornice, through which were thrust poles, their bases resting upon the consoles, while a canopy made fast to their tips by cords afforded the spectators shelter from the sun's rays. We may well believe that in the first instance this upper storey was not present, and that it belongs to a later time, or is, at any rate, a modification of the original design, since Vespasian did not live to complete the building.

Works of Titus.—Titus, the son and successor of Vespasian, completed the Coliseum, and built—or, at least, began—that imperial structure

which, as the Flavian Palace, has recently been brought by excavations to the light of day, and which nearly corresponds to the ordinary idea of a Roman house, only with more magnificent dimensions and broader conceptions. The arch at St. Remy, in France, may also belong to the age of Titus, since it resembles in shape the Arch of Titus at Rome. The great Roman cenotaph at the same place, remarkable for its elegant proportions, may also be mentioned here.

Domitian and Nerva, the successors of Titus, built several sumptuous temples at Rome and linked their names to a forum erected by them.

Greek artists were most in demand in Italy and in the Greek and Asiatic provinces, and thus the proportions of the buildings in those provinces came nearest to those of the Greek works of the ancient period. But Rome had other possessions, where, outside the legions which upheld her authority, she had no workmen at her disposal other than the unskilled native barbarians, who were unacquainted with monumental construction. Yet even here such edifices were erected as not only served for the needs of the colonies, but also gave expression to Rome's love of pomp; for wherever the Romans went they set up their own monuments, in order to command the respect of the natives. In these structures Greek delicacy and proportions were entirely lost, and the Roman system was followed in the principal lines only. Of this class is the entire series of Roman buildings in Germany, of which the Porta Nigra, at Treves—which according to the most recent discoveries belongs to the first century—is one of the most important examples (*pl. 9, fig. 11*).

Trajan's Works: Forum and Basilica Ulpia.—The Emperor Trajan in the beginning of the second century displayed considerable architectural activity. He erected the forum which bears his name, and with which is connected the Basilica Ulpia, the largest and most important of Roman basilicas. This had four aisles and a nave, the latter being 25 metres (82 feet) wide and 80 metres (262½ feet) long, while the entire space, including the double side-aisles, which extended on all four sides of the nave, measured 58 metres (190 feet) by 130 metres (426½ feet). There were entrances on one of the shorter sides, as well as on the long side adjacent to the forum. The other short side contained the semicircular tribune of justice. The architect was the Greek Apollodoros. The Forum of Trajan was unsurpassed in the costliness of its decorations and the magnificence of its design; to this structure Hadrian added porticoes, basilicas, temples, and triumphal monuments.

Arches and Columns.—At Ancona, Trajan's name is also linked to a magnificent triumphal arch which is constructed of Parian marble and stands on one of the two moles that protect the harbor. At Benevento there is also an Arch of Trajan, erected by the emperor in 113 A. D. to commemorate the restoration of the Appian Way. This arch is of Parian marble, of the Corinthian order, and is highly ornamented with basso- and alto-relievos representing various events in the reign of the emperor. It now forms one of the gates of the city (*Porta Aurca*). An

Arch of Trajan stood also at Rome, and out of it was built the still extant Arch of Constantine. Trajan is also honored in the column which bears his name (*pl. 11, fig. 3*). This stood within an encircling colonnade at the side of the Basilica Ulpia. On the shaft are reliefs arranged spirally in twenty-three tiers, scenes in Trajan's victories, containing twenty-five hundred figures. The column, including capital and base, is $97\frac{3}{4}$ feet high. The summit was formerly crowned by a colossal gilt bronze statue of Trajan, now replaced by a figure of St. Peter erected by Pope Sixtus V. A temple dedicated to the emperor, in connection with a forum, formed the culmination of testimonials of honor.

Other Works of Trajan.—Trajan was a Spaniard. A part of his architectural zeal displayed itself on his native soil, where he erected numerous triumphal arches, as at Merida, Bara, and Caparra. To his age belongs the aqueduct of Segovia (*pl. 9, fig. 10*), as well as the magnificent six-arch bridge at Alcántara (Arabic for "the Bridge"), with which was connected a triumphal arch to Trajan. In Africa, also, on what was once the domain of Carthage, a triumphal arch remains at Tucca which by its inscription is proved to belong to the last years of Trajan's reign.

The importance of the Roman provinces increased more and more, and with it the erection of grand public edifices in all parts of the extensive empire. Many of the works of public utility, as streets and bridges, which adorn Central Europe, belong to the time of Trajan and his immediate successor.

Hadrian's Works.—Hadrian, who held sway from 117 to 138 A. D., was himself an architect. But, jealous of his fame, he tolerated no rivals, and Apollodoros, who criticised his youthful works, was satisfied by sentence of death that the emperor saw in him a superior in art, since he dared to criticise the imperial attempts. During Hadrian's reign architectural activity increased both at Rome and in the provinces. We have already, as regards Rome, mentioned his buildings on the Forum (*p. 85*). Particularly characteristic of his time was his villa on the Tiber, in which a number of architectural monuments were copied, and in which in particular the Egyptian style was reproduced by the side of the Grecian.

Influence of Egyptian on Roman Art.—The expression of Virgil, that the Romans had no art of their own, but allowed others to erect their works, finds here an interesting illustration. What we have previously met with was not Roman art, but Grecian in the service of the Romans. Wherefore should not Egyptian art be made useful also? Rome had opened her doors to Egyptian as well as to Grecian gods. The Egyptians, who held fast to their ancient culture and religion, were under Roman dominion, as well as the Greeks. The former lived in the same relations with Rome as did the latter; and if pure æsthetic proportions in the creations of the Greeks so inspired the Romans that they became Hellenized, so the grandeur and overpowering earnestness of the wonderland of the pyramids must have brought the might of their magic to bear upon sus-

ceptible spirits. No other art was so imposing and powerful, so earnest, and so awe-inspiring as that of the Egyptians; and if now even the ruins overpower and captivate our senses, what must have been the impression created by those works in the full splendor of their perfection, in all their wonderful consonance with nature's simplicity, upon an educated and thinking generation whose art, though displayed in such magnificent works, was not the outcome of their own inner consciousness, but was awakened by a foreign art? What wonder that the tendency to the massive and imposing at the cost of those more noble qualities, refinement and purity, should have been fostered into greater activity by the impression created by Egyptian art?

Temple of Venus and Roma.—Among Hadrian's buildings of another class must be mentioned the Temple of Venus and Roma, a Corinthian pseudodipteral structure 50 metres (164 feet) wide by twice this dimension in length, with two cellæ, placed back to back, while the entrances, corresponding to the pronaos and posticum of the ancient temple, were upon the opposite ends. Massive walls enclosed the cellæ along the side-walls, on the interior of which were porphyry columns and statues in niches, and the whole carried a ponderous tunnel-vault. In the centre, the point of actual contact of the cellæ, there were two apses, each of which was covered by a half-dome. In each of these apses was a colossal seated figure of the Deity. The plan was designed by Hadrian, who proved himself an able architect, and who contributed materially to the broader development of Grecian temple-art, since by means of the vaulted interior he succeeded in carrying out the monumental idea, which could not so well be expressed by the wooden roof.

Other Works of Hadrian.—At Athens, Hadrian connected the old city with the new by a grand gateway still extant; it is an arch above which rise Corinthian columns. Of an aqueduct constructed by Hadrian there remained in the last century a series of Ionic columns the central intercolumniation of which was adorned with an arch resting on the architrave. This served for the decoration of the spring-house. A market upon the north side of the citadel exhibits also Corinthian pilasters upon its exterior; these stand upon pedestals, and above each of them the entablature projects forward. A contemporary of Hadrian, Herodes Atticus, built at Athens, upon the southern side of the Acropolis, the Odeion, named after his wife, Regilla; he completed also, on the Ilissos, the Panathenaic Stadium, which was constructed entirely of Pentelic marble. He likewise erected a theatre at Corinth. A beautiful gateway at Nicæa, according to the inscription upon it, dates from Hadrian's time.

Jerusalem, which Titus had destroyed, was rebuilt by Hadrian under the title of *Ælia Capitolina*; and in order to despoil it of its sacred character he covered with a temple of Venus the site of the sepulchre of Christ, already become a place of pilgrimage for Christians. According to an inscription, an arch of triumph at Isaura is one of Hadrian's structures. In Middle Egypt, Hadrian built the city of Antinoë to the memory

of Antinous, who, in obedience to the oracle, prolonged the emperor's life by drowning himself in the Nile. This city was laid out according to a regular plan, with colonnades at the sides of the streets, those of the principal street being Doric; it was also adorned with a triple-portalled triumphal arch and other monumental buildings. To the same date belong the Corinthian temple at Nîmes—still well preserved and known as the "*Maison Carrée*,"—and another temple, generally called the "*Temple of Diana*," which served the purpose of a basilica and was erected in honor of the Empress Plotina, wife of Trajan.

The Mausoleum of Hadrian (*pl. 11, fig. 2*), the remnant of which, known as the Castle of St. Angelo, ranks as one of the most important buildings in Rome, appears again as a member of that chain of burial-monuments which are connected with Assyrian stepped-pyramids, and which since Artemisia erected her famous tomb in honor of her husband have been called "*mausoleums*."

Works of Antoninus Pius.—Under Antoninus Pius the Temple of Antoninus and Faustina at Rome was erected in a rich Corinthian style, near the forum, in 150 A. D. As in some before-mentioned single cellæ, the side-walls are decorated with half-columns, which are a continuation of those of the portico; and thus it exhibits a certain approach to the Etruscan system, without departing as a whole from its Greek proportions, since the cella is entirely surrounded by the equivalent of a portico. The walls externally are adorned with marble slabs, and the unfluted marble columns are entirely of costly cipolin. The frieze shows a row of griffins, with candelabra standing between each pair. To the time of Antoninus Pius belong the well-preserved theatre of Patara at Lykia, a city gate with three arches surmounted by a Doric frieze, many funeral monuments, and the ruins of a temple. Other theatres of the same period remain at Telmessos and Myra in Lykia, and at Iasos in Caria.

Works of Marcus Aurelius.—A memorial column of Antoninus Pius at Rome is still represented by a fragment in the Vatican Garden, while another, similar to that of Trajan, erected by Marcus Aurelius, the son of Pius, and commemorative of the victory over the Marcomanni, still exists; but in place of the statue of the emperor it bears that of St. Peter (*pl. 11, fig. 4*). The Temple of Æsculapius, as well as the so-called "*Prætorium*" at Lambessa, in West Africa—the latter a basilica-like design—dates from the period of Marcus Aurelius (162–175 A. D.).

To the end of the second century belong the Temple of the Pythian Apollo—which has two Doric-like columns *in antis* and an Ionic frieze—a magnificent arch of triumph at Orange, in France, the principal temple at Knidos, in Caria—which has Corinthian columns—a Corinthian temple at Alabanda and another at Ephesos, the theatre at Laodicea, and a unique gateway and a magnificent tomb at Mylassa, in Caria, the last a square temple-like structure of two columns between square angle-piers placed upon a lofty base and surmounted by the remains of an eight-

sided pyramid. The circular Temple of Vesta at Rome, copied from that of Tivoli, and the Corinthian columns of which still stand erect, was constructed also at the close of the second century.

Works of the Third Century: Arch of Severus.—The triple Arch of Septimius Severus (*pl.* 10, *fig.* 3), richly bedecked with sculptures, belongs to the beginning of the third century, as does also a small gate of honor erected to the same emperor by the goldsmiths at the entrance of the cattle-market. Of this date are also the ruins of a temple usually designated as that of Jupiter Tonans and situated not far from the great Arch of Triumph. A quadrangular arch erected in memory of Severus in the year 214 at Thebessa (Theveste), in Numidia, also remains, together with another at Attura (Sanfur); and the huge amphitheatre of Nîmes dates also from the beginning of the third century.

Baths of Caracalla.—Among the mightiest architectural monuments of the third century are the Baths of Caracalla, at Rome (211–227 A. D.). In the later days of the Imperial City, when public opinion gradually lost weight in politics save when the legions of the provinces mutinied and killed emperors, public baths, or *thermæ*, served more and more as the centres of the business which had previously been confined to the forum. At the time of Constantine, Rome possessed fifteen such *thermæ*, of which those of Titus have already been mentioned. The Baths of Caracalla consisted of an outer structure, which enclosed a court about 350 metres (1148 feet) square, and contained two rows of single bath-rooms, while in the court stood the main building, in the immense halls of which were great basins of cold water for swimmers, halls for sweating (*sudatoria*), for rubbing, for games of ball, etc. These enormous halls were in part vaulted, while others were covered with flat roofs of beams; the cold bath (*frigidarium*) was probably open. We give on Plate 12 (*figs.* 1, 2) the present condition and a restored interior perspective of the *frigidarium* of Caracalla's Baths.

Other Works of the Third Century.—The Column of Alexander Severus (221–235 A. D.), at Antinoë, was Corinthian, and had immediately above its base a crown of acanthus-leaves, from which sprang the shaft. The well-preserved amphitheatre of the ancient Thysdrus, in the province of Carthage—now El-Djemm, the largest of Roman ruins in Africa—dates from the reign of the elder Gordian (about 238 A. D.). It resembles the Coliseum in having five galleries or corridors in the first storey. From an inscription upon the Porta de' Borsari, at Verona, we learn that this gate was erected 265 A. D. It has two portals with two galleries above. Similar and of the same age is the Porte d'Arroux, at Autun, France (*pl.* 10, *fig.* 2). Germany has an example of a huge sepulchre in the Tomb of the Secundines (*fig.* 1), at Igel, near Treves; it is 20 metres (65½ feet) high. The fine triumphal Arch of the Sergii, at Pola, the amphitheatre there, and that at Verona, as well as the theatre at Aspendos, in Pamphylia—which is still preserved almost entire—perhaps belong also to the third century.

Period of the Decline.—At Rome may be seen the remains of an Arch of Gallienus (260–268), the rough workmanship of which, as well as the remarkable degradation of its details, may be noted. The age of Rome's splendor was over; her authority had begun to weaken. Ever since the time when the Gauls had threatened the Capitol, and since Marius, in the year 102 B. C., had conquered the Cimbri and the Teutones, there had been no serious danger that the city would have to defend herself against any foreign enemy. In the second half of the third century Rome again found her ramparts useful, and Aurelian in 270 A. D. built a new fortification, the Germanic people having already attained such importance that Rome had to negotiate with them, and assigned them certain lands. Aurelian's great work, though it did not stay the fall of Rome, has withstood the wear of ages, and it still exists (*pl. 9, fig. 6*).

The Temple of the Sun at Rome (*fig. 5*) is also Aurelian's work. Though the Greek temple entirely supplanted the Etruscan, yet the memory of the latter retained some vitality even in the midst of relics of ancient Rome that had come down from the days of the Empire, and historic traditions clustered around these oldest designs and hallowed them; so that Sulla rebuilt the Capitoline Temple in antique Etruscan form, though perhaps with Greek details, and in many other temples the ground-plan remained more or less Etruscan. Thus, Aurelian's Temple of the Sun has a cella that is less oblong than the Grecian, and the inner colonnades which surround it on all sides support a gallery. The temple is entirely closed in the rear, and colonnades are attached to it on three sides only, while the character of the principal façade exhibits the Greek system, like the temple at Athens and other buildings.

Temple of the Sun at Palmyra.—The more Rome declined, the more the East grew in importance; and in the course of the third century we find a series of buildings in Asia which degenerate more and more into eccentricity or into caprice and irregularity. Palmyra, an oasis in the Syrian desert, has a number of monuments. The principal is the Temple of the Sun, a Corinthian peripteros the capitals of whose columns had thin bronze plates attached; it was enclosed by a court the entrance to which was formed by the building shown on Plate 11 (*figs. 5, 6*). We also find here quadruple colonnades which, broken by portals and triumphal arches, extend from it along the principal streets of the city. The gate (*pl. 12, fig. 8; pl. 11, fig. 7*) forms the entrance.

Ruins of Baalbec: The Great Temple.—We doubt whether a more extensive collection of ruins can be found than at Baalbec (*pl. 12, figs. 3–6*). Here also the principal edifice is a Temple of the Sun, the florid style of whose details is shown on Plate 10 (*figs. 9, 10*). The Great Temple consists of four large divisions, situated on a spacious platform of a total length of 1100 feet. Behind a propylon a magnificent flight of steps conducts to a columned entrance-portico; the second division is a hexagonal structure enclosing a large open court surrounded by pillars; entering through a grand portal, the third division is an immense quadrangular

open court surrounded on three sides by columns; and in the rear or fourth division is the Temple of Baal, a peripteral temple with ten Corinthian columns in front and rear line, and nineteen on each side.

Temple of the Sun.—By the side of the Great Temple stands the Temple of the Sun, a peripteros of two rows of eight columns in front, one row in the rear, and fifteen columns on each side. The temple is believed to be a work of Antoninus Pius, but the fore-court and the adjoining buildings belong to the close of the third century. Figure 8 (*pl.* 11) shows a portion of the coffered ceiling which adorns the peristyle of the temple. The extreme degeneration and caprice which these edifices had reached are shown in the circular temple on Plate 12 (*fig.* 7).

The Temple of Virtus et Honos at Rome (now the Church of S. Urbano) belongs to the third century. It has a four-columned portico, and a high, heavy-looking attic above the entablature.

Works of Diocletian: Baths.—At the beginning of the fourth century Diocletian erected those immense *thermæ* which in extent and magnificence surpassed those of Caracalla. The principal hall, converted by Michelangelo into a church, exists still in Sta. Maria degli Angeli. It is similar to the *frigidarium* shown in Figure 2, but is roofed with three great transverse vaults that spring from the entablature of the eight columns, which entablature serves also to support groups of statues. The eight shafts are monoliths of Oriental granite. Two circular structures, one of which is now the Church of S. Bernardino dei Termini, likewise belonged to these *thermæ*.

Pompey's Pillar.—The so-called "Pompey's Pillar" at Alexandria was set up in 302 A. D. by the Diocletian prefect Pompeius. It stands on a mound of earth about 40 feet high, and has a height of 98 feet 9 inches. The shaft consists of a single piece of red granite, and is 73 feet long and 29 feet 8 inches in circumference. The capital is Corinthian, 9 feet high; the pedestal is a square of about 15 feet on each side, and bears a Greek inscription in honor of the emperor Diocletian.

Diocletian's Palace.—When Diocletian retired from power, in 305 A. D., he erected at Spalato, in Dalmatia, a magnificent palace which still remains an object of wonder. It is a rectangle of 630 feet by 510 feet. The end facing the sea contains the emperor's apartments, which open to the sea by a portico, and upon the opposite end is the grand entrance, or *Porta Aurea*. Two intersecting streets divide the interior into four sections. The colonnades which lead to the vestibule of the residence have no architrave, but semicircular arches spring from column to column. (See Vol. II. *pl.* 31.)

Connected with Diocletian's palace was a domical temple dedicated to Jupiter, of which a cross-section is given in Figure 10 (*pl.* 11). Another temple, that of Æsculapius, is a four-columned prostylos. The details, especially the profile of the cornice, are completely barbarous, yet the entire design is original and suggests mighty energy.

Circus of Maxentius.—The architecture of Rome itself was less fantastic. The Circus of Maxentius (303–312), near the Via Appia, is an elongated structure in the centre of which stands a straight parapet wall around which the contestants drove, and the two ends of which were marked by a terminal pillar. One of the short sides is a semicircle, and here, under the seats, is the richly-decorated Porta Triumphalis. The other short side, through which the contestants entered, was shut in by a segmental edifice which contained stables and rooms for the chariots. Around rose seats in amphitheatral fashion, with the place of honor for the emperor and his suite on one of the longer sides.

The Basilica of Peace, built in the place of one constructed by Vespasian and burned in the time of Commodus, was also the work of this emperor. Like the principal room of Diocletian's Baths, it was roofed with three transverse vaults which sprang from massive columns (*pl.* II, *fig.* 9). A terrace surrounded the structure.

Ancient heathen culture had taken its last flight. Its inward truth and moral earnestness had long since expired; now its outward steadfastness began also to fail. Caprice became the only law; and the more this caprice made itself felt in progressing eastward, and the more it impressed itself upon the groundwork of the ancient voluptuousness and luxury, the more extravagant it became. There are, in fact, in Asia other works which surpass both those of Baalbec and those of Palmyra in eccentricity; such are all the temples, theatres, triumphal arches, buildings, and tombs at Petra, in Arabia, most of which are hewn out of the rock. Pilasters and columns are placed in the strangest positions, parts of buildings are torn away from one another, and we even find a round, tower-like structure set between the two parts of a broken pediment. The capitals have lost their classic form; they are mere blocks the projections of which simulate the form of capitals. Remains which are of this late age, and upon which we observe winding flutes, may also be seen at Kandahar, in Persia, and at Aphrodisias, in Caria.

Works of Constantine's Time.—The buildings in Treves which date back to the time of Constantine are at once more earnest and simple in style. Among these must first be mentioned the great basilica, which has two rows of large windows, one over the other, and pilasters both inside and out. It is an oblong hall 73 metres (240 feet) by 27.8 metres (91 feet), with a semicircular tribune at one end; it was restored in 1846, and in 1856 was consecrated as a Protestant church. The remains of an amphitheatre and of an imperial palace—in connection with which we may also mention the remains of certain villas at Fliessem and Nennig—must not be forgotten. Quite similar to the Basilica of Treves, but smaller, is that of Pergamum, in Mysia, which still exists as the Church of St. John, and which shows that there were present inner and outer columned porticoes, of which that at Treves affords no traces. To the time of Constantine also belongs the tolerably well-preserved theatre at Orange, France.

Among Constantine's buildings at Rome is the arch which bears his name (*pl.* 10, *fig.* 4), and which, as already stated (p. 86), was composed of fragments of the Arch of Trajan, and also borrowed its entire design from the same source. A four-sided Arch of Janus, rebuilt by Constantine, on the Forum Boarium, was hastily and defectively constructed from fragments of the older one. Similar imperfection is exhibited in the remains of the Ionic Temple of Concord on the Forum Romanum, whose columns are composed of various fragments and have differently-shaped bases.

Although the materials of more ancient works were utilized, yet even at that time Rome undoubtedly presented a spectacle of the greatest splendor, far surpassing the seats of ancient Oriental culture. But her day was over. Constantine transferred his capital to Byzantium (330 A. D.), which he sumptuously rebuilt and named after himself. The Constantinople of to-day contains no monument of its founder's time, and history gives us no clear picture of the city. With the removal of the capital Rome's period of architectural activity closed, and, though she still remained the world's centre, her power was lost, and the extensive destruction of the grand old monuments then soon commenced, being partly carried on by barbarians who destroyed for destruction's sake, and partly by other barbarians who used the fragments of the ancient structures for new purposes.

3. APPLICATION OF COLOR TO ARCHITECTURE.

Polychromy is the term applied in the history of art to the ornamentation of sculptured and architectural works by means of varied colors. In buildings these colors were made to cover both flat spaces and architectural details, while in statues or individual portions of the human figure and of drapery, and in other products of plastic art, separate features of a sculptured ornament were colored in a manner characteristic of the subject.

Egyptian.—As regards Architecture more particularly, we find Egyptian monuments of oldest date covered both on wide wall-spaces and on separate details, such as columns, capitals, bases, cornices, etc., with extensive series of highly-colored designs in low relief consisting in the main of figures and hieroglyphs, and often with purely decorative ornamentation.

Assyrian and Babylonian palaces and temples were similarly ornamented, the effect, however, being produced by the use of colored bricks whose surface was protected by glazing. The interiors of these buildings were likewise ornamented, together with the further addition of wall-paintings and the coloring of ornamental details.

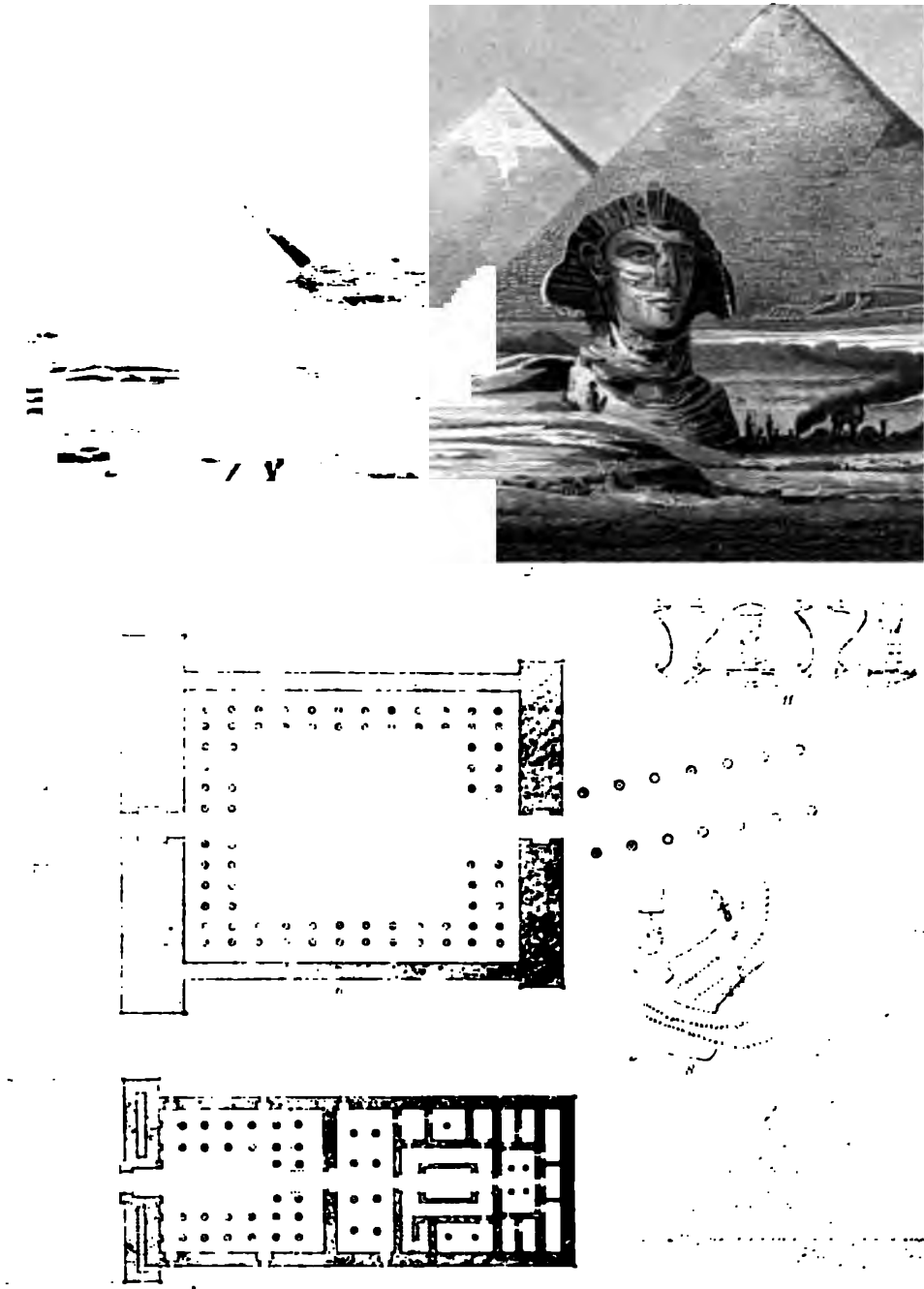
Phœnician Architecture employed for the same purpose metallic coverings, sometimes of the precious metals—a practice evidently derived from Mesopotamia. From this source also may be traced a similar use of bright

metals as applied by the Greeks of the Heroic Age, who learned the art from Oriental examples.

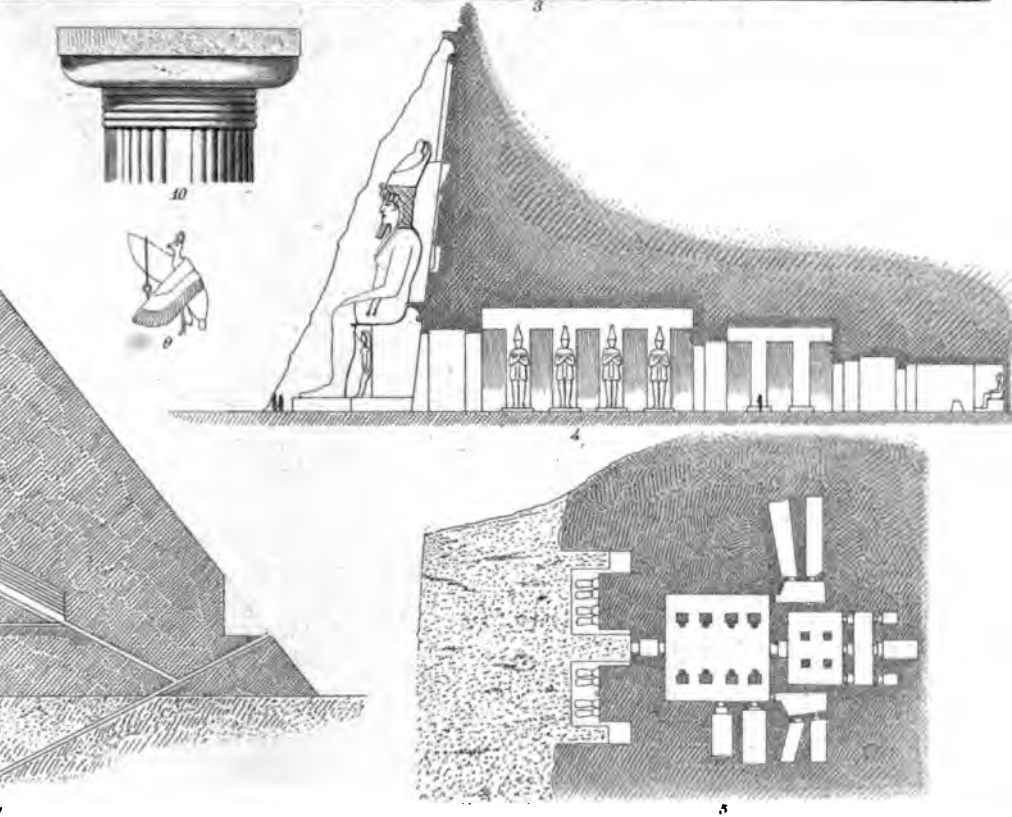
Grecian.—In Greek architecture a complete system of coloring had been developed at an early period, particularly as applied to Doric temples, upon numerous remains of which traces of this coloring are still distinguishable. These traces are most clearly manifest upon friezes, where the *triglyphs* are generally colored blue, the *gutta*, above and below, gilded, the *metopes* red, the cornice, which was often ornamented with foliated tracery, being variously colored, usually blue, red, gold, and green. The decorations of the pediments also show clear remains of color, the background being usually either blue or red; and the same is true of the capitals of columns. We are left more in uncertainty regarding the exterior halls of the cella, whose interiors, according to the distinct statements of ancient authorities, were extensively ornamented with large historical wall-paintings. The same uncertainty exists regarding the architrave, upon which gilded shields or other metallic ornaments were often applied, and also regarding the shafts of columns. In general, it is sufficiently established that polychrome ornamentation was widely prevalent in early Greek architecture, and that coloring was practised upon all portions of temple-structures, including not only such as were built of tufa or brick, but also buildings of marble. (See *Frontispiece*.)

Roman.—In Roman architecture the extensive application of sculptured ornament even upon the smallest details, such as we find on the capitals of Corinthian columns in Greek temples, had displaced colored decoration—at least, upon exteriors; but wherever stucco was used as a covering of walls, ceilings, columns, and pillars—thus, especially, on the exteriors of thermæ, palaces, and private residences—polychrome ornament again finds application. Closely connected with this phase of the subject is the employment of large brilliantly-colored mosaics for floors, a practice which in the declining period of Grecian art obtained extensively in Alexandria and Pergamum, and which was later introduced at Rome. This practice, however, was not confined to these centres of culture, but extended throughout the ancient world, as is evidenced by numerous remains. It found various applications, and in time came to be utilized for the ornamentation of walls, columns, and other interior features. This was succeeded by the introduction of Mural Decoration, in the modern sense of the term, by paintings and colored windows, the subjects of which, often very mechanically executed, consisted mainly of symbolical and other fanciful compositions.

EGYPT

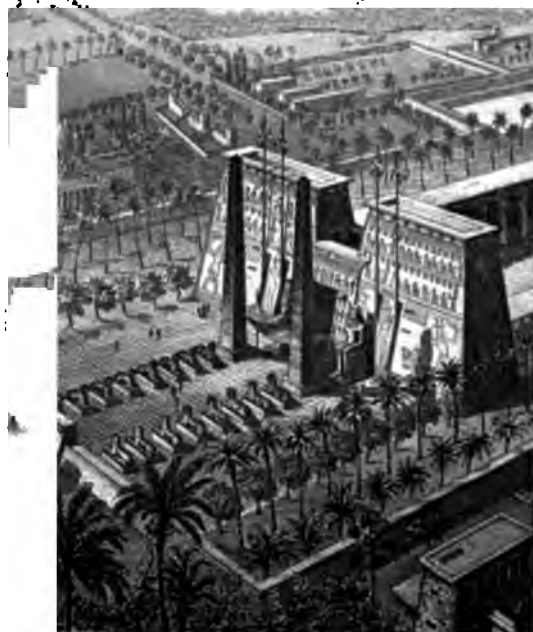


1. Cross-section of the Great Pyramid of Cheops. 2. Pyramids of Cheops, Chephren, and Men-fore-court of the Temple at Luxor. 7. Plan of the Temple of Khons at Karnak. 8. Relief from TT the Temple at E-nch.



near Gizeh. 3-5. Rock Temple at Ipsamboul: 3, Façade; 4, Longitudinal section; 5, Plan. 6. Plan of the ornament from a cornice of the Great Temple at Philae. 10. Capital of a column at Thebes. 11. Relief from

EGYPTIAN

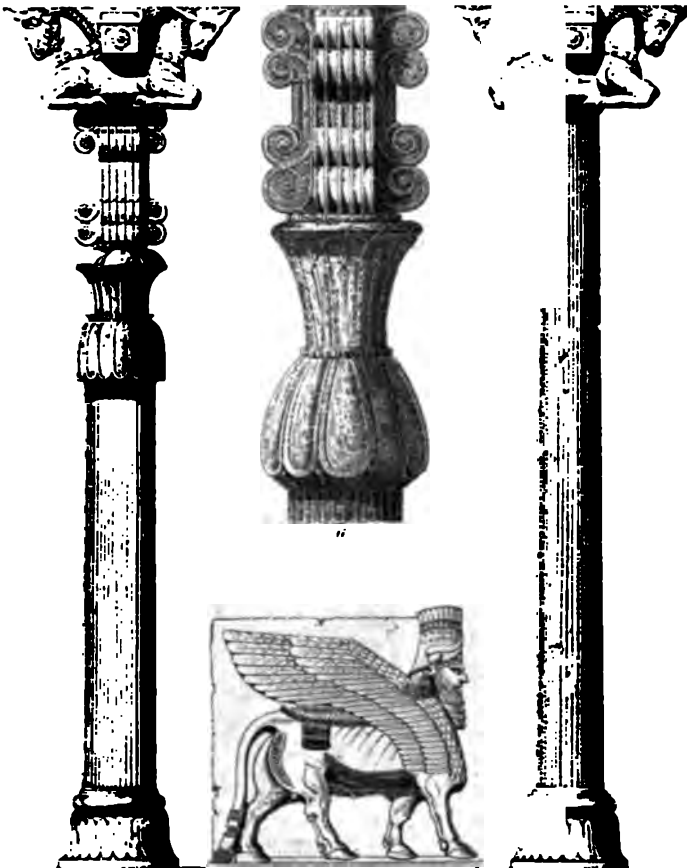


1. Small temple on the heights of Denderah. 2. Ideal restoration of the Egyptian Temple at Edfu. 3. 4. 5. 6. 7. Lotus-capitals of the Great Temple at Karnak. 8. Capital from Philae. 9. Calyx-capital from the Great Temple. 10. Moulding of a temple-cornice.

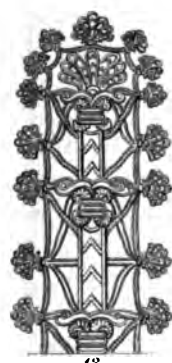
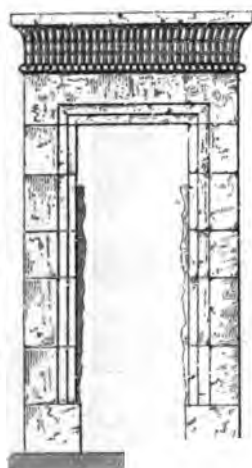
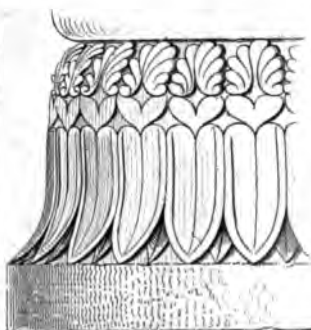


reat Temple at Philæ. 4. Small temple on the island of Elephantiné. 5. Lotus-capital from Beni-Hassan. k. 10. Capital from a temple at Denderah. 11. Palm-capital from Esneh. 12. Normal-jointed corner and

PERSIAN

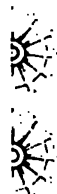


1. Great Hall of Xerxes at Persepolis. 2. Façade of the rock-tomb of Darius at Persepolis. 3. Tomb of Xerxes at Persepolis. 4. Column of Xerxes at Persepolis. 5. Column of Xerxes at Persepolis. 6. Column of Xerxes at Persepolis. 7. Column of Xerxes at Persepolis. 8. Winged bull, portal-figure at Khorsabad. 9, 10. Details of capital and base of a column at the "column Hall" at Persepolis. 11. Persian plant ornament — "Tree of Life"

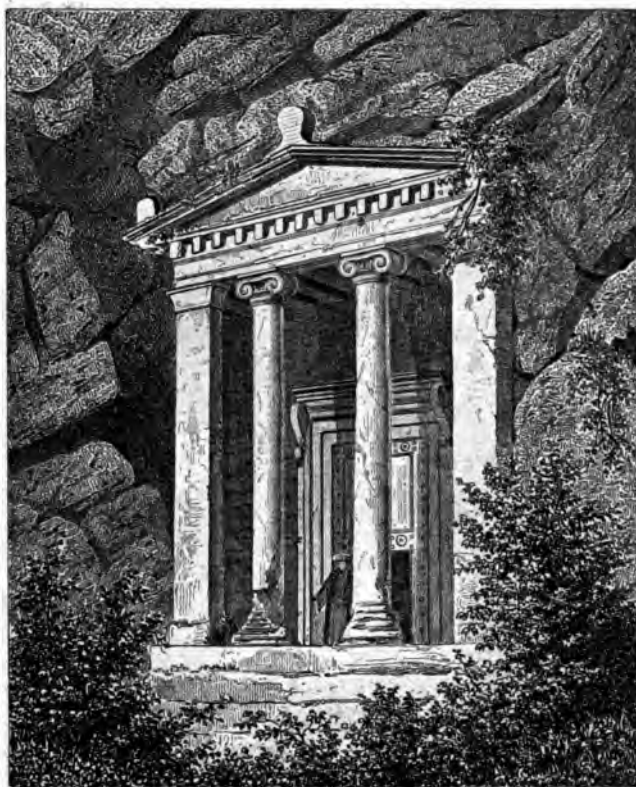


1æ. 4. Ruins of the Propylæa of the Great Hall of Xerxes at Persepolis. 5-7. Persian columns from the Great Side-portal of the "Hundred-column Hall" at Persepolis. 12. Sculptured relief in the portal of the "Hundred-

PELASGIAN



1-3. Lycian rock-tombs: 1, Rock-tombs at Myra, Asia Minor; 2, Façade of a rock-tomb at Myra; 3, Façade of a rock-tomb at Myra. 4-7. Pelasgian ornament: 4, Plan, 5, Column-base, 6, Plan, 7, Column-base. 8-10. Patterns of Pelasgian ornament. 11. Gate of the Lions at Mykene, Greece. 12. Gate of the Lions at Samos.



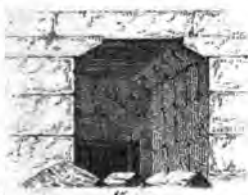
3



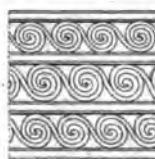
11



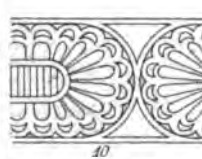
14



15



9



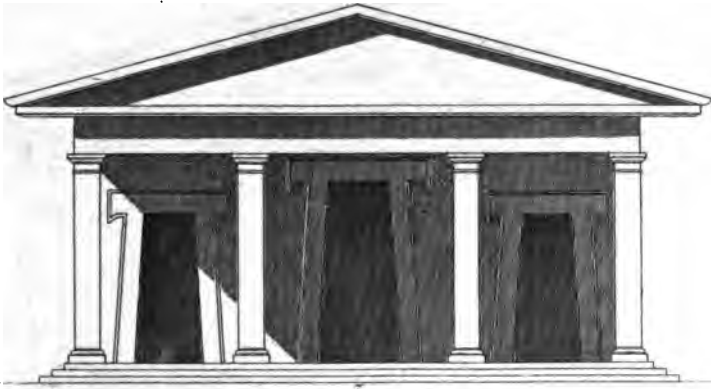
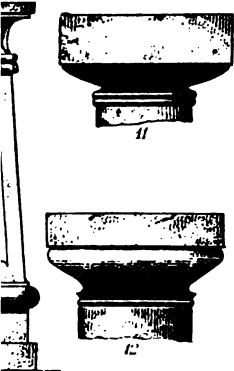
10

mb at Telmissos, Asia Minor. 4-7. Treasury of Atreus at Mykenæ, Greece: 4, Entrance-door; 5, Cross-section;
n wall at Mykenæ. 13. Gate at Phigalia, Greece. 14. Gate at Amphissa (Salona), Greece. 15. Passageway

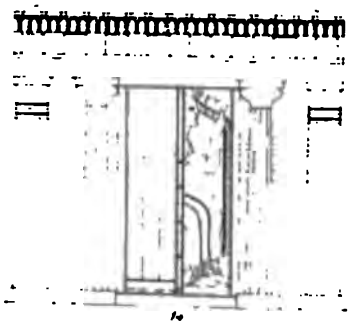
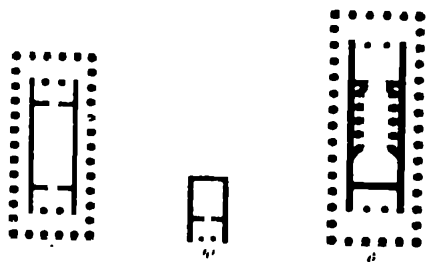
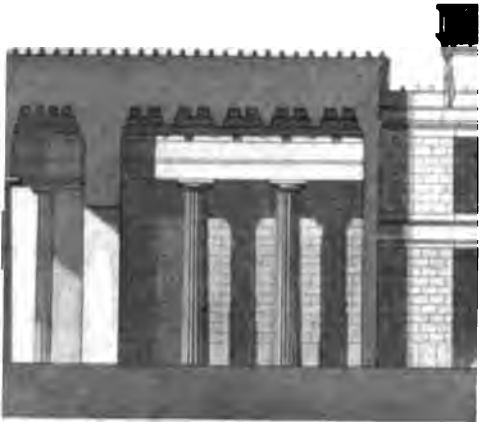
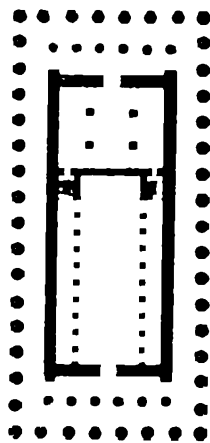
ETRUSCAN



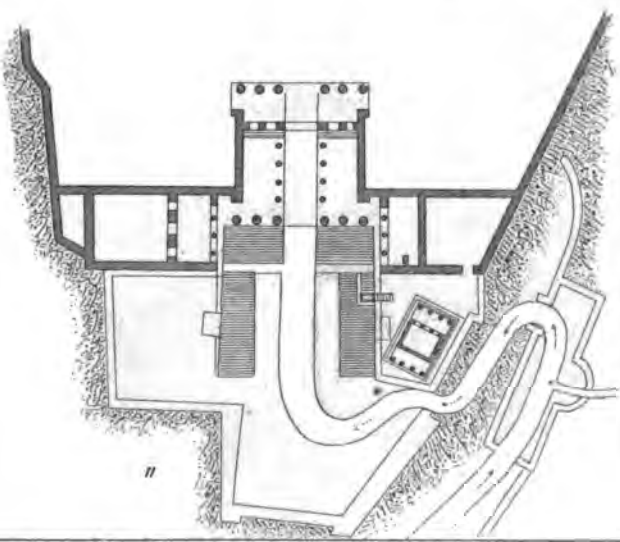
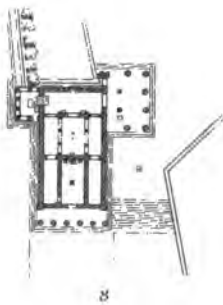
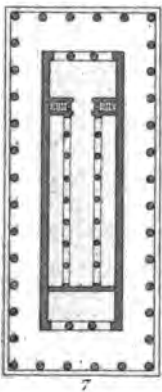
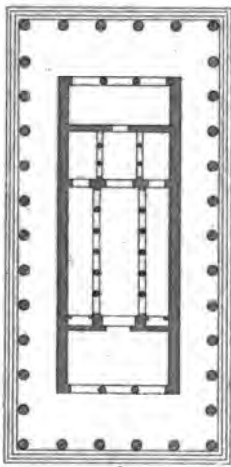
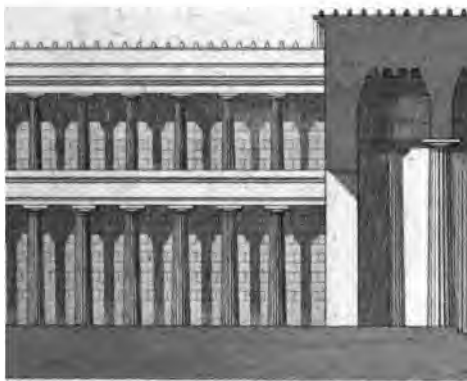
1-3. Rock-tombs at Cervetri (Cære), Italy. 4. Tomb of the Horatii and Curiatii at Albano, Italy. 5. Tomb (according to Vitruvius). 8. Gate at Falerii, Italy. 9. Column-base of the Cucumella, near Volci, Italy. 1. Cucumella.



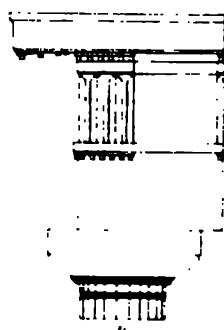
Forchia, Italy. 6. Façade of an Etruscan Temple (complete in all its details). 7. Façade of an Etruscan temple the Tomba de' Pilastri at Cervetri, Italy. 11. Column-capital of the Cucumella. 12. Pillar-capital of the



1. Plan of the Parthenon at Athens. 2. Longitudinal section of the Parthenon. 3. Plan of the Temple of Apollo at Bassae, near Phigalia, Greece. 7. Plan of the Temple of Poseidon at Paestum, Italy. 8. Plan of Nemesis at Rhamnos, Greece. 11. Plan of the Propylaea on the Acropolis at Athens. 12. Propylaea with Klytias and Ergotimos at Florence, Italy.



pia. 4. Temple of Zeus at Olympia. 5. Plan of the Temple of Theseus at Athens. 6. Plan of the Temple on on the Acropolis at Athens. 9. Plan of the Tower of the Winds at Athens. 10. Plan of a small Temple 13. Supposed façade of an old Grecian temple (according to Reber). 14. Temple-façades, from the vase of



1. Ruins of the Temple of Poseidon at Paestum, Italy. 2. Restoration of the Temple of Poseidon at Paestum, Italy. 6. Entablature from the Temple of Poseidon at Paestum. 7. Entablature from the Temple of Zeus at Egina.



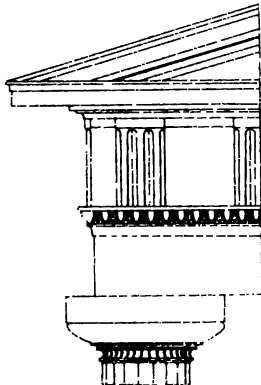
3



5

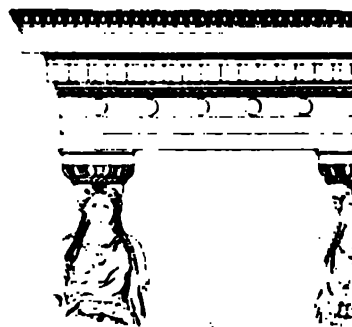
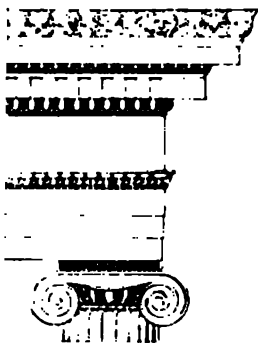
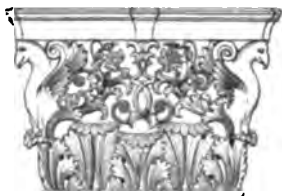


8

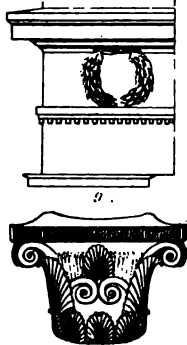
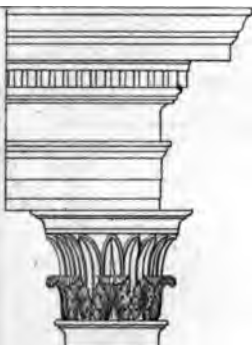
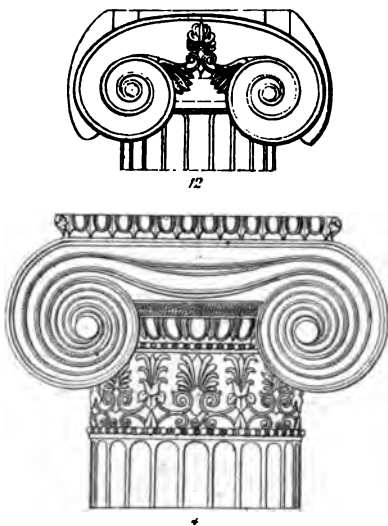
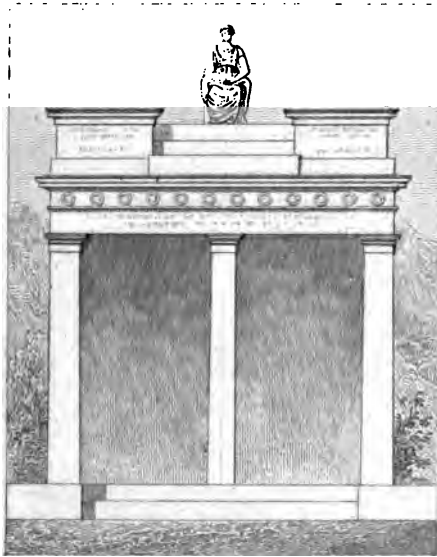
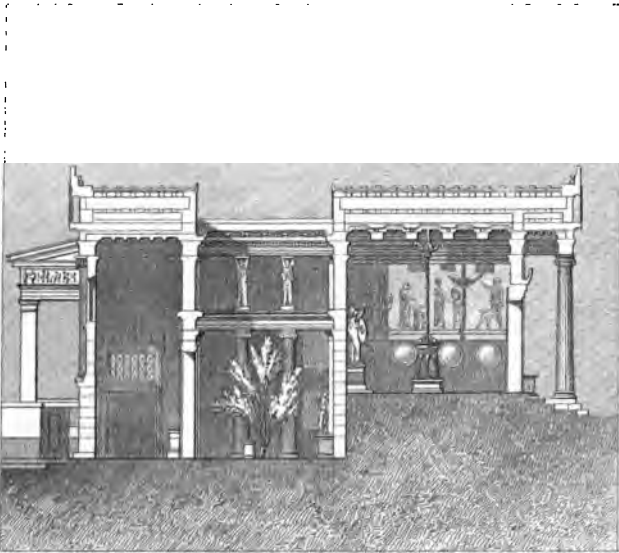


9

enon at Athens. 4. Interior of the Hypaethral Temple of Zeus at Olympia. 5. Temple of Zeus at Agrigento, 8. Entablature from the Parthenon at Athens. 9. Entablature from the Temple of Demeter at Paestum.

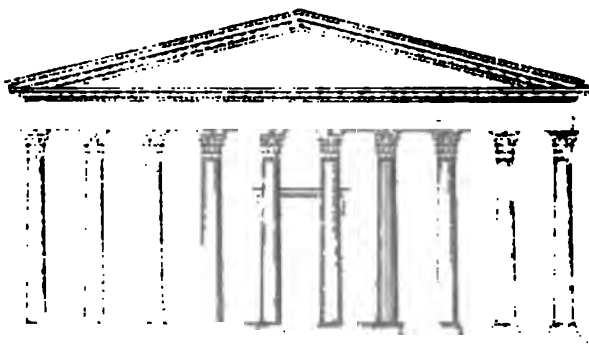
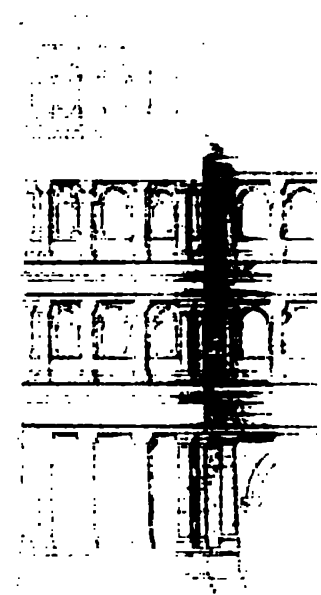
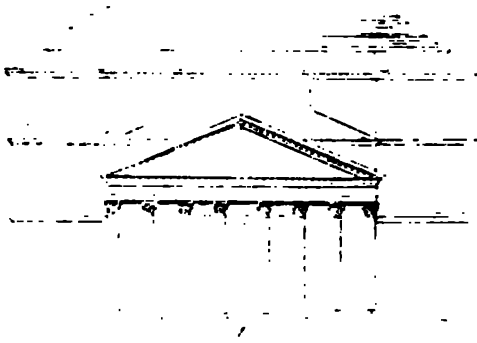


1, 2. Erechtheion on the Acropolis at Athens. 3. Cross-section of the Erechtheion. 4. Ionic capital from the Erechtheion. 6. Tower of the Winds at Athens. 7. Entablature and Corinthian capital of the Tower of the Winds. 10. Choragic Monument of Lysikrates (Lantern of Demosthenes) at Athens. 11. Entablature from the Choragic Monument of Lysikrates. 15. Foliated (Corinthian) capital from the Temple of Pallas Athena at Priene (Caria), Asia Minor.

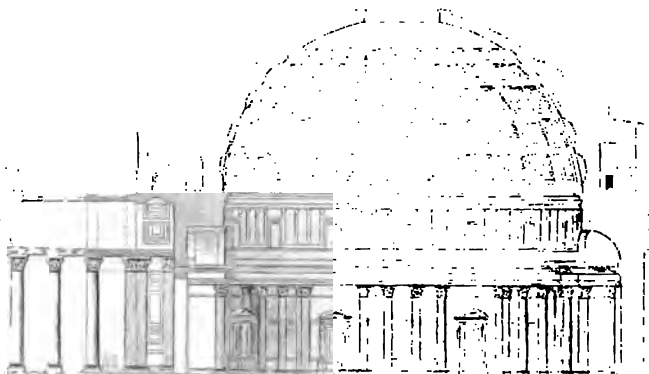


naos of the Erechtheion. 5. Entablature, with caryatides, from the portico of the Hall of the Nymph Pandrosos
8. Choragic Monument of Thrasyllus at Athens. 9. Entablature from the choragic Monument of Thrasyllus,
of Lysikrates. 12, 13. Capitals from Bassae, near Phigalia, Greece. 14. Entablature and Ionic capital from the
aos at Miletos, Asia Minor. 16. Capital from the Great Temple at Eleusis, Greece.

ROMAN



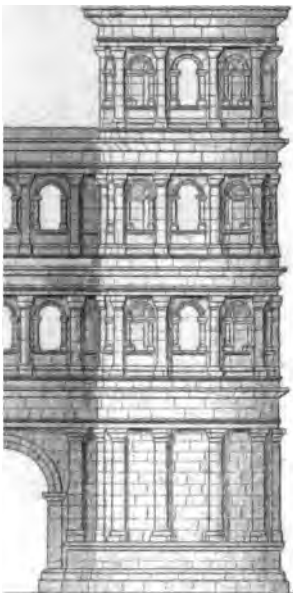
1. Pantheon at Rome. 2. Cross section of the Pantheon. 3. Ruins of the Temple of Zeus at Athens. 4. Atrian at Rome. 7. Pons Fabricius at Rome. 8. Street of Tombs at Pompeii. 9. Ponte dell'Arco, Rome.



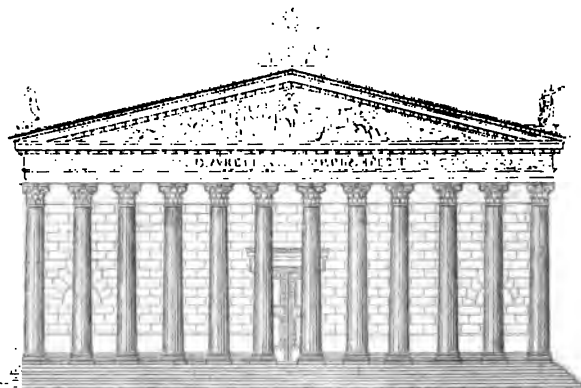
2



7



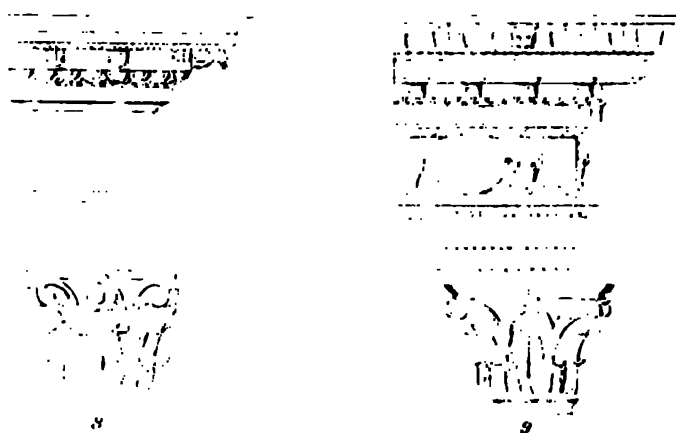
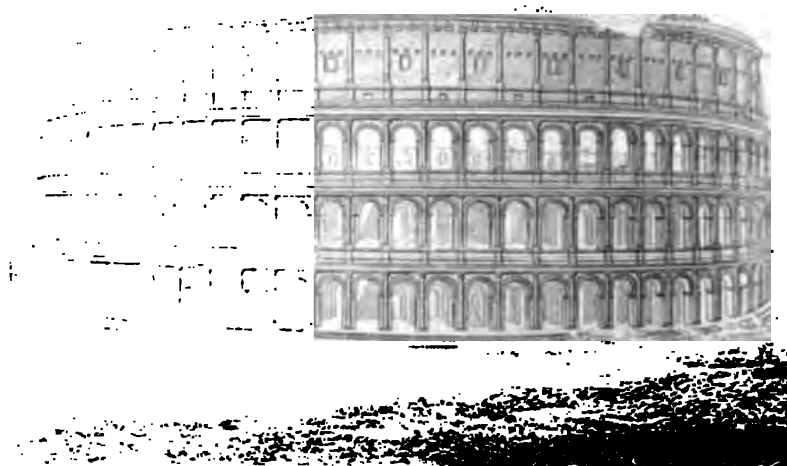
10



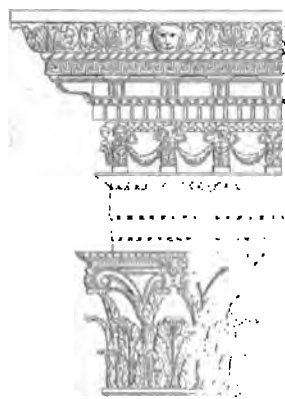
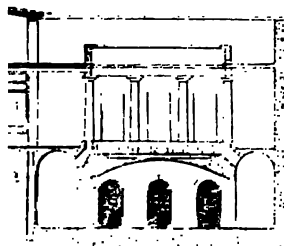
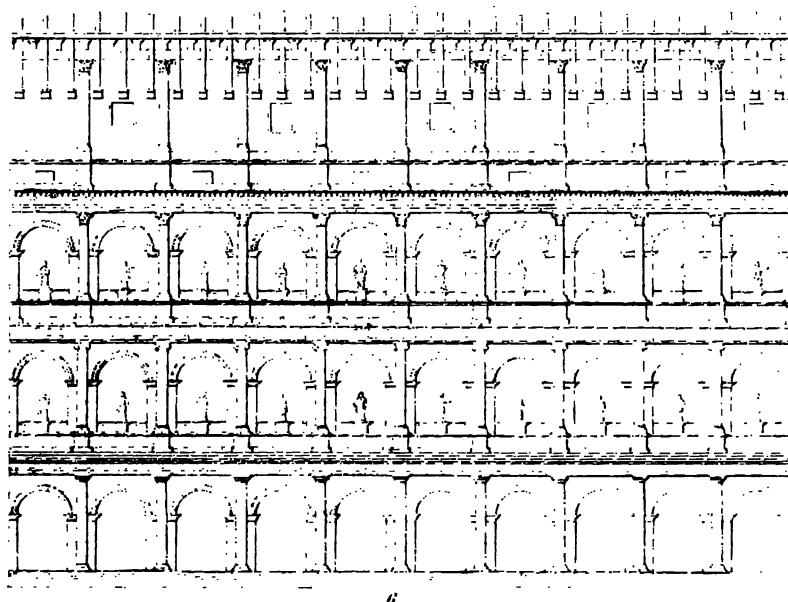
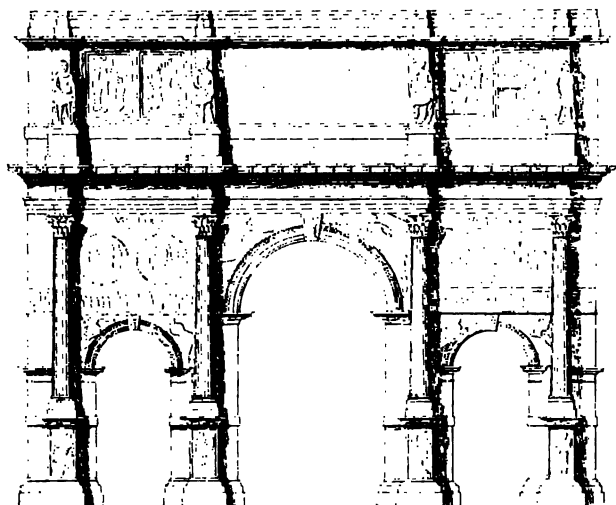
5

f the Temple of Zeus at Athens. 5. Restoration of the Temple of the Sun at Rome. 6. City-wall built by
educt near Volci, Italy. 10. Roman aqueduct at Segovia, Spain. 11. Porta Nigra at Treves, Prussia.

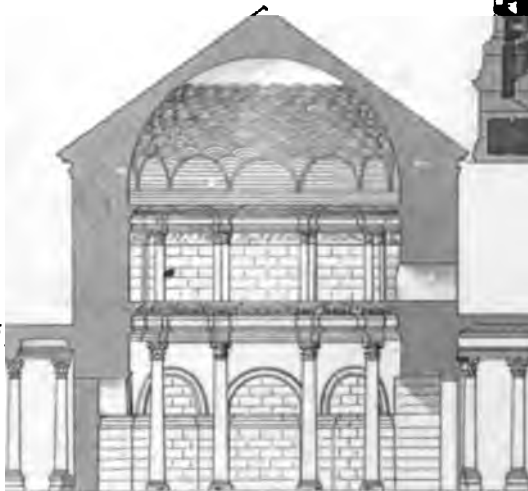
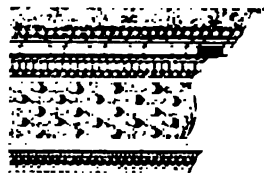
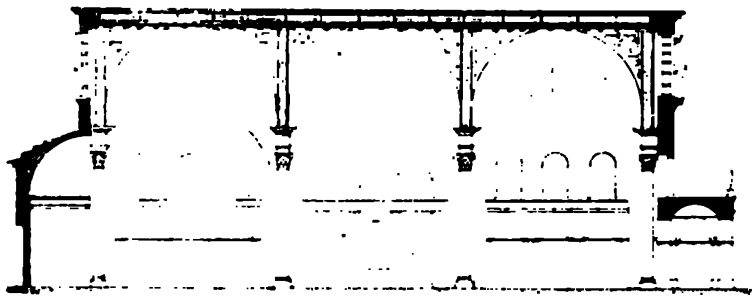
ROMAN



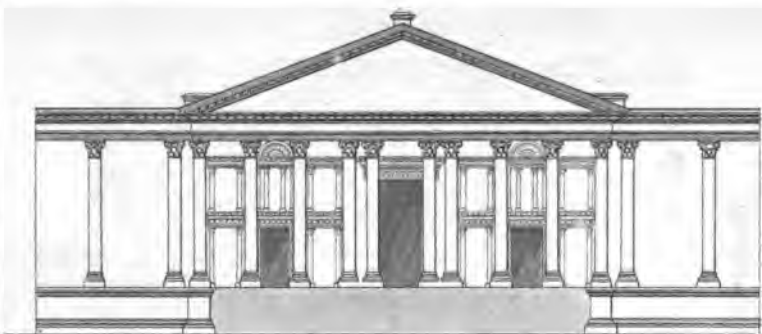
1. Monument of the Secundini at Igel, near Treves, Prussia. 2. Porte d'Arroux: Roman city-gate at Autun, France. 3. Longitudinal section of the Colosseum at Rome. 4. Longitudinal section of the Colosseum at Rome. 5. Longitudinal section of the Colosseum at Rome. 6. Original architecture of the Coliseum at Rome. 7. Longitudinal section of the Colosseum at Rome. 8. Longitudinal section of the Colosseum at Rome. 9, 10. Entablatures and capitals of the Temple of the Sun at Baalbec (Heliopolis), Syria. 11. Entablature and capital of the Temple of the Sun at Baalbec (Heliopolis), Syria.



3. Triumphal Arch of Septimius Severus at Rome. 4. Triumphal Arch of Constantine at Rome. 5. Coliseum, the Casa di Campione at Pompeii. 8. Entablature and capital from the portico of the Pantheon at Rome. 10. Temple of Jupiter Stator at Rome.



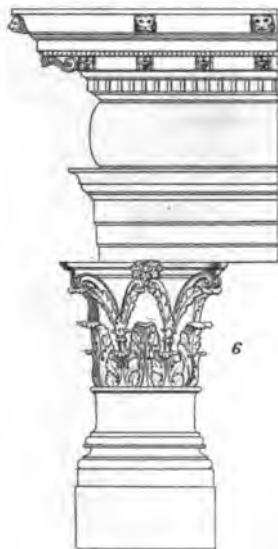
1. Ruins of the Temple of Vesta at Tivoli, Italy. 2. Mausoleum of Hadrian at Rome. 3. Trajan's Column, capital, and base from the Temple of the Sun at Palmyra. 7. Capital and entablature from the gate to the Basilica of Peace by Maxentius at Rome. 10. Cross-section of the circular Temple of Jupiter in Diocletian's



5



4



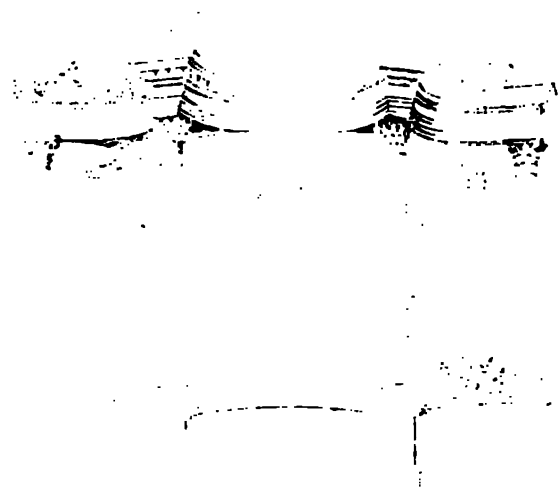
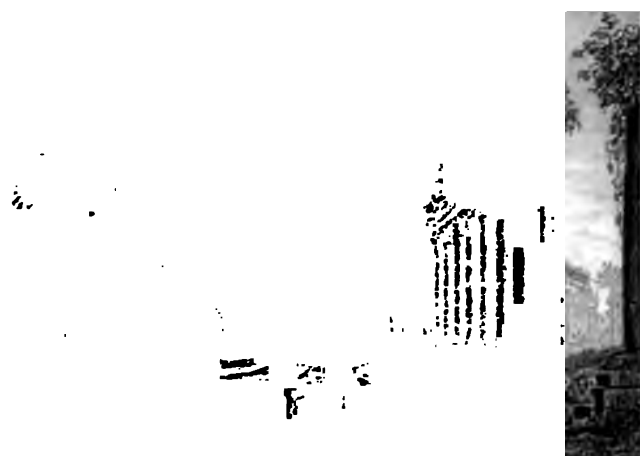
6



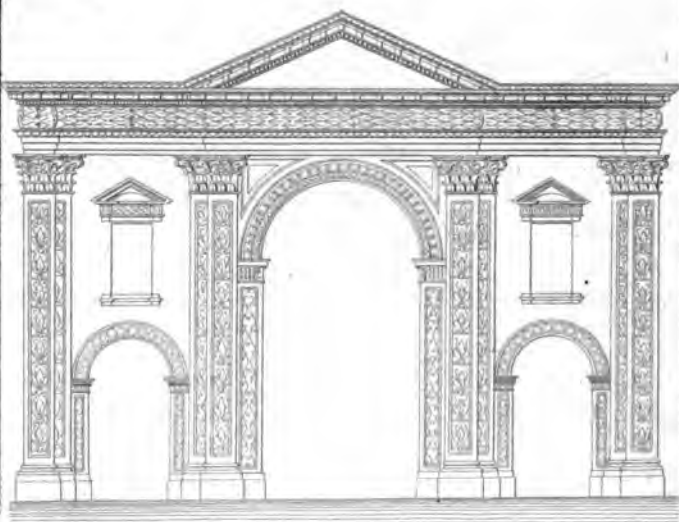
8

4. Column of Marcus Aurelius at Rome. 5. Portal of the Temple of the Sun at Palmyra, Syria. 6. Entab-
Temple of the Sun at Palmyra. 8. Coffered ceiling of the Temple of the Sun at Baalbec (Heliopolis), Syria.
alato.

ROMAN



1, 2. Baths of Caracalla at Rome: 1, Present condition of the Frigidarium; 2, Restoration of the Frigidarium to the Temple of the Sun at Palmyra, Syria.



8

Viollet-le-Duc). 3-6. Ruins at Baalbec (Heliopolis), Syria. 7. Circular Temple at Baalbec. 8. Gate leading

PART II.

EARLY CHRISTIAN, MEDIÆVAL, AND
RENAISSANCE ARCHITECTURE.

PART II.

EARLY CHRISTIAN, MEDIÆVAL, AND RENAISSANCE ARCHITECTURE.

I. EARLY CHRISTIAN ARCHITECTURE.

WITH the accession of Constantine new demands were made upon Architecture; he had embraced Christianity, and edifices for public worship were to be constructed. As the Christian church is the meeting-place for a great assembly, the temple furnished no model for it. The congregations were compelled to use existing assembly-halls, and the basilicas supplied both the model and the name for the structures which were dedicated to the King of kings. Even before this time Christianity had its places of worship; it had not always been persecuted during the three hundred years of its existence, and in the days of persecution hidden places were made to serve as asylums and assembly-rooms.

There still remain at Rome and at other cities the catacombs, which served as cemeteries and places of refuge, and also for the service of the proscribed worship. But, although tolerated for a long time, Christianity had no tendency toward display, nor did the greater part of the new communities possess the means with which to erect large buildings; they assembled in the houses of well-to-do members, and only exceptionally in structures erected for the purpose, which were modelled after the reception-halls, and partly, perhaps, after the basilicas. (See Vol. II. p. 327; Vol. III. p. 87.)

Early Christian Churches.—It is doubtful whether any Christian place of assembly built prior to the time of Constantine is now extant. At Omm-es-Zeitun, in Central Syria, there is a chapel which bears the date 282 A. D.; probably this building, as well as certain others, is really Christian and dates from the time of the inscription. A small chapel at Chagga, in the same country, may also belong to the third century.

Basilicas: The Sessoriana.—Constantine's churches are of the first importance. At Rome he built the Basilica Sessoriana, which, in honor of the Cross of Christ found by the Empress Helena, was erected in a previously-existing structure, the so-called Sessorium. After an alteration in the twelfth century the building was entirely modernized in 1743; yet critical examinations of the church bearing the name of Sta.

PART II.

EARLY CHRISTIAN, MEDIÆVAL, AND RENAISSANCE ARCHITECTURE.

I. EARLY CHRISTIAN ARCHITECTURE.

WITH the accession of Constantine new demands were made upon Architecture; he had embraced Christianity, and edifices for public worship were to be constructed. As the Christian church is the meeting-place for a great assembly, the temple furnished no model for it. The congregations were compelled to use existing assembly-halls, and the basilicas supplied both the model and the name for the structures which were dedicated to the King of kings. Even before this time Christianity had its places of worship; it had not always been persecuted during the three hundred years of its existence, and in the days of persecution hidden places were made to serve as asylums and assembly-rooms.

There still remain at Rome and at other cities the catacombs, which served as cemeteries and places of refuge, and also for the service of the proscribed worship. But, although tolerated for a long time, Christianity had no tendency toward display, nor did the greater part of the new communities possess the means with which to erect large buildings; they assembled in the houses of well-to-do members, and only exceptionally in structures erected for the purpose, which were modelled after the reception-halls, and partly, perhaps, after the basilicas. (See Vol. II. p. 327; Vol. III. p. 87.)

Early Christian Churches.—It is doubtful whether any Christian place of assembly built prior to the time of Constantine is now extant. At Omm-es-Zeitun, in Central Syria, there is a chapel which bears the date 282 A. D.; probably this building, as well as certain others, is really Christian and dates from the time of the inscription. A small chapel at Chagga, in the same country, may also belong to the third century.

Basilicas: The Sessoriana.—Constantine's churches are of the first importance. At Rome he built the Basilica Sessoriana, which, in honor of the Cross of Christ found by the Empress Helena, was erected in a previously-existing structure, the so-called Sessorium. After an alteration in the twelfth century the building was entirely modernized in 1743; yet critical examinations of the church bearing the name of Sta.

Croce in Gerusalemme enable us to distinguish the pre-Christian parts of the building from those of Constantine's period.

Basilicas of St. Peter and St. John Lateran.—Two magnificent basilicas, those of St. Peter on the Vatican and St. John Lateran, were built as witnesses of the triumph of Christianity—that of St. Peter, upon the foundation-walls of Nero's circus, the place of the saint's martyrdom. It stood until 1506, when it was removed to make way for the new Cathedral, but not until correct plans had been made which show it to have been a columned basilica of four aisles and a nave, with a great cross-nave, or transept, and a simple apse. A colonnade shut off the apse from the transept; a rectangular fore-court was surrounded by a portico. Various outbuildings which existed at the time of the demolition appear also to have belonged to that early date. The nave was separated from the aisles by two ranges of twenty-three Corinthian columns, above which stretched a complete entablature bearing the upper walls, which were more than 20 metres (65½ feet) high and in their upper portion were broken with windows and decorated with rich mosaic. The inner and outer side-aisles were divided by a row of columns which stood on stylobates and were connected by arches. St. John Lateran was rebuilt in the ninth century, and later entirely modernized (*pl.* 14, *fig.* 1), so that its former plan can only be guessed at; yet it is probably similar to the church rebuilt in the ninth century.

Other Basilicas.—The small Basilica Pudentiana at Rome belongs principally to the age of Constantine. That emperor also erected many churches in the East, particularly a basilica at Jerusalem above the Holy Sepulchre, upon the site of which Hadrian had built a Temple of Venus. This basilica had a nave and four aisles, with an aisle around the apse; a columned court stood before the entrance. Figures 8 to 10 (*pl.* 13) show the various alterations which the Church of the Holy Sepulchre has passed through. The basilica with a nave and four aisles which Constantine built at Bethlehem in honor of the Blessed Virgin is still tolerably well preserved; in this twelve columns connected by an architrave separate the aisles. Nothing is left of the basilica built by Constantine at Tyre.

Domical Churches.—The basilica was, however, not the only model for the Christian church: already the two small Syrian chapels before mentioned (p. 97), built before Constantine's time, had adopted the ancient Oriental dome, and it was evidently in obedience to some local tradition that Constantine built at Antioch the octagonal church which was long ago destroyed. Another domical church of this date is St. George at Salonica (Thessalonica), and the church erected at Neocæsarea by the father of St. Gregory Nazianzen was an octangular domical structure.

Church of Sta. Sophia.—Constantine also built Christian churches at his new residence, Constantinople—among them, that of Sta. Sophia, about which all we know is that it was oblong, that it was considerably enlarged about the middle of the fourth century, that at the beginning of

the fifth century its roof was burned, that it was then covered with a vaulted roof, and that in the sixth century it gave place to the present Church of Sta. Sophia (*pl.* 15, *figs.* 6-8). As his burial-place the emperor built the cross-shaped Church of the Holy Apostles, the rich gilded ceiling of which was famous. This was also renovated in the sixth century.

Churches of North Africa.—Many remains of churches still exist in North Africa, as the Basilica of St. Reparatus, at Orléansville, built 326 A. D. Though only 15 metres (49 feet) in total width, it had a nave and four aisles, with galleries above the aisles; the aisles are separated by piers instead of columns. Similar is a small basilica at Tefaced.

Architecture of Central Syria.—A series of interesting monuments in Central Syria give us an idea both of the architectural activity and of the ordinary life of that period wherever Christianity had become the state religion. In this region classical elements were combined with Asiatic traditions; whence we may conclude that a very ancient traditional manner of building existed here and formed the model of the works which still exist in tolerably good preservation. These buildings serve to explain many older ones, and may help to show us how in the Alexandrian buildings the vault was combined with the Greek secular structure.

Vaulted Construction.—We have, especially so far as private dwellings are concerned, a local school before us, but, since this arose from the needs of the climate and the habits of life of a people, it probably retained its character through all ages; and thus these structures give us a right to judge of what seem similar forms in earlier periods, and particularly to glance back upon the vaulted construction, the domes and terraces, of the ancient Asiatic peoples. But the local tradition had not sufficient vitality to preserve itself from the influences of cosmopolitan culture, and, again, it offered, in connection with an extended circle of local schools, more or less closely related elements which were acceptable to the universal classical culture, and after having been appropriated by the latter in Asia were dispersed everywhere.

If we assume that the Greeks were acquainted with the art of vaulted construction as far back as the time of the development of the Greek habit of thought from the Pelasgian and that they used it for secular purposes, and if we admit that in the time of Alexander it was very extensively employed, we are quite justified in calling this a transfer of local Asiatic elements to the classical cosmopolitan culture. These elements had gained so much ground that even in the times of which we here treat we are forced to recognize in them something more than mere local tradition, and must regard the cupolas and other vaults with much the same sentiments as if we met with them in any other district of the wide Roman Empire.

Syrian Tombs.—The first works of this age which in this region present themselves for consideration are a series of tombs, part of which, dating from the second century, the third, and the beginning of the fourth, are those of pagans; the latest of these dates from 324

A. D. From this time forward Christianity supplanted heathenism in the district, and Christian emblems show upon the façades of the tombs.

Syrian Cities.—If we go from these mortuary abodes into the cities of the living—which in those parts of the world are as well preserved as though the inhabitants had just left them, even though these cities too have passed away—we meet with streets laid out as they are to-day, and perhaps as they have been for many thousand years in the East, narrow and crooked, and shut in by the houses whose bald outer walls are pierced only by the entrance-door. This door gives access to an oblong quadrangular court which on one or two sides is enclosed by superposed arcades, with which the other rooms communicate, just as the houses are now built in Syria, where porticoes are placed in front to keep the hot rays of the sun from the living-rooms at the rear. Balustrades with stone slabs bound the upper arcade between the columns. We find no changes in the plan to aid us in fixing the date. The several centuries during which this mode of building was practised can be determined only through the details; yet inscriptions and Christian emblems inform us that these buildings may be referred to the time of Constantine and his successors. In 331 there lived in Nefadi a Christian named Thalasis who when he had built for himself a house wrote his creed over the door.

Construction.—Among these well-preserved groups of buildings two quite different schools may be distinguished. The most southern of these is located in the Hauran, where there is no timber; here the structures are roofed in the most original manner with arches which cross the room diagonally, the spaces between them being ceiled with stone beams whose span is diminished by corbels. Both secular buildings and Christian churches are roofed in this wise, as the basilica at Tafkha, the two churches at Qunawât, and the five-aisled basilica at Sueideh, which has porticoes with mouldings, a three-aisled choir, a principal apse, and two lateral apses. These latter are somewhat richer and more recent, and were erected under the influence of the completed basilica style. The northern of the two groups alluded to, in which a richer display of details is the consequence of more favorable materials, consists of columned basilicas of the fourth and fifth centuries at Kherbet-Hass and El-Barah, which are also to be noted for the rich details of their exteriors.

Churches of the Fourth Century.—We will now return to some slightly later plans, that we may consider and properly appreciate these in connection with other interesting efforts in church-architecture. Therefore we will now trace the development of other regions.

In Germany, Treves was one of the earliest seats of Christianity, and the plan of its cathedral is ascribed to St. Helena, the mother of Constantine.

The Tomb of St. Helena in the Campagna, about two miles outside Rome, is a circular domed structure having in its walls eight niches

above which are eight windows; it is now known as the Torre Pignattara, from the *pignatte*, or amphoræ, built into the concrete dome to lighten it.

The Tomb of Sta. Costanza, Constantine's daughter, built about the middle of the fourth century, is a circular building in the interior of which are twelve coupled columns bearing entablatures and connected by semicircular arches. Above these rises a superstructure pierced by windows; it has a domed ceiling, and the circular surrounding aisle, or ambulatory, has a tunnel-vault and niches in the wall.

Near the Lateran Basilica exists an octangular baptistery in which an interior range of columns separates the higher central space from the lower circular aisle. The columns, taken from older structures, have porphyry shafts with Ionic and Corinthian capitals united by an architrave, above which rises a second shorter range of columns. The central part is covered by a dome (*pl. 15, fig. 9*).

Sta. Maria Maggiore at Rome, a grand basilica with a nave and two aisles, is a work of the fourth century; it was built by Pope Liberius (352-366). The upper wall of the nave is borne by Ionic columns and architraves.

S. Paolo fuori le Mura (St. Paul's outside-the-walls) was built in 386 at Rome by Theodosius (345-395), the last real emperor and a strong supporter of the Church. This edifice was completed 400 A. D., and, with the exception of the ceiling, existed until 1823, when it was burned, but has since been rebuilt. The modern basilica is in shape similar to the older edifice, of which in other respects it is but an erroneous imitation. Figures 2 and 3 (*pl. 14*) give an interior view and ground-plan, the former according to Hübsch's restoration.

Sta. Maria Rotondo at Nocera de' Pagani belongs to the close of the fourth century; it is circular, with a double row of columns, and serves as a baptistery. The dome rests immediately on the columns without an intervening ring of walling.

San Lorenzo at Milan is another building of the close of the fourth century, when that city was the imperial residence. In the sixteenth century this church was rebuilt; yet its ground-plan (*pl. 15, fig. 11*) and previous architecture can be made out.

The Fall of Rome.—We must now speak of political history, which in the course of a century entirely changed the stage upon which the development of art proceeded. Theodosius at his death, in 395, divided his empire into an Eastern and a Western. The seat of the latter was in 404 removed from Milan to Ravenna. In 408 the Visigoth Alaric stormed and plundered Rome; in 455 it was again sacked by the Vandals under Genseric, and in 473 by the Visigoth Ricimer, who as Roman marshal had made and unmade several emperors. Odoacer, King of the Heruli, in 476 removed the last shadow of an emperor, Romulus Augustulus. The Western empire had ceased to be; the German barbarians had parcelled it among themselves. Rome itself, a heap of ruins, its political importance

lost, remained only the metropolis of the Church. Among the barbarians who spread themselves over Italy the Ostrogoths had won the chief place, and in 493 they made Ravenna their capital.

Churches of the Fifth Century.—Whatever Italian buildings were executed in the fifth century belong almost exclusively to ecclesiastical architecture. While Rome was plundered and its monuments overthrown, new churches were everywhere set up through the zeal of the bishops. Early in the fifth century Bishop Paulinus was active at Nola, in Campania, and built, besides several small structures—monumental churches in honor of St. Felix—a large and fine basilica the wall of whose nave was carried upon an arcade. The nave had a flat panelled ceiling, and in the aisles were separate chapels. A transept with a principal and two side apses formed the east end. A baptistery and some other buildings were connected with the basilica; so that the whole group, according to Paulinus's own saying, looked like a little city. The richly-painted decoration which the poet Paulinus gave to his building, together with a wealth of poetical inscriptions, has been preserved to us in his letters and poems.

The Cathedral of Ravenna, first built at the beginning of the fifth century, is a basilica with a nave and four aisles; it was completely remodelled in the eighteenth century. The octangular Baptistery of S. Giovanni in Fonte still exists. Galla Placidia erected in 425 A. D. the Basilica of St. John the Evangelist. It has twenty-four antique marble columns, and its apse, though semicircular within, is polygonal exteriorly. The Church of the Holy Cross and the mortuary Chapel of Galla Placidia are both cruciform structures; the latter is still extant as SS. Nazario e Celso, in which church the arms have tunnel-vaults, while a cupola rises at the intersection. The rich, awe-inspiring wall-mosaics still exist. Two other basilicas at Ravenna—Sta. Agata, with one apse, and S. Francesco, with three—also belong to this period. In S. Francesco the arches do not rest immediately on the capitals, but a cushion-shaped impost wider above than below is interposed between them. This is a reminiscence of the sections of entablature which in older buildings supported the columns below the arches.

The Basilica of Sta. Sabina on the Aventine at Rome was erected under Pope Celestinus (422-437); it has twenty-four Corinthian marble columns taken from older Roman edifices. S. Pietro in Vincoli was built under Pope Leo I. (440-462); it has twenty Doric white-marble columns. Somewhat later is S. Martino ai Monti, the twenty-four marble columns of which are united by an architrave; underneath is an old Roman vaulted three-aisled crypt. The Basilica of St. John at Constantinople was built in 463 A. D.; as in pagan basilicas, there is a gallery over the aisles. Many Christian basilicas at Rome are thus arranged.

Circular Churches.—Side by side with the basilica plan we have the circular one, principally used for smaller chapels and for subordinate structures set aside for some particular purpose, as baptisteries and mortuary chapels. The shape was also exceptionally employed in earlier

pagan times, when there were special reasons for so doing, although we cannot now tell what these reasons were. Sometimes in an earlier period this form had been used for secular buildings, since the thermæ and Diocletian's palace at Spalato enclosed such structures. These became more general now that the great churches were united with the bishop's palace, with the dwellings for the clergy, and with rooms for other secular purposes. The circular mortuary chapel is a reminiscence of the ancient tumulus and the mausoleum. In the fifth century, and still more in the sixth, the circular form and the central lantern obtained widespread application in Christian churches, both in the East and in the West, though we cannot always see the motive which inspired their use.

S. Stefano Rotondo at Rome, built under Pope Simplicius (468-483), is a circular church of the largest dimensions; the ground-plan is given on Plate 15 (*fig. 3*). The middle circle of Ionic columns has an architrave and bears a wall which rises high above the roof of the aisle and is pierced with a circle of windows. In the surrounding system of columns eight radial rows of columns and arches describe the cross-shape, which is also visible externally. The clear diameter of the central circle, which is covered, not by a cupola, but by a wooden roof, is 22.8 metres (75 feet). Similar to this is *S. Angelo* at Perugia, whose lofty centre is borne on sixteen Corinthian columns.

Syrian Churches: St. Simeon Stylites at Kalat-Seman, in Syria, is a work of the fifth century in which the circular and longitudinal forms are combined (*pl. 13, fig. 11*), and is said to be an exact copy of Constantine's Church of the Apostles. Four complete three-aisled basilicas terminate in an octangular centre, of whose former roof we know nothing certain, though it was probably of wood, if indeed it were not left open. The eastern arm particularly, which terminates in three apses, is a complete basilica. A smaller round church is that of Ezra, completed about 510 A. D. (*fig. 13*); a larger example is the cathedral at Bostra (*fig. 12*), finished in 512 A. D. Both of these are in Syria, as is also the originally-designed small church at Moudjeleia (*fig. 14*).

Structures of the Sixth Century: Works of Theodoric.—Great architectural activity prevailed at Ravenna, which in 493 became the spoil of the Ostrogoths. Theodoric the Great was deeply imbued with the spirit of classical culture, and, strongly impressed with the majesty of the ancient monuments, did what he could to protect and restore them to his kingdom. Not content with this, he longed to re-establish the splendor of the ancient Empire, and constructed in Ravenna a series of great buildings.

Theodoric's Palace, of which a small plain portion still remains, was a grandiose design decorated with splendid works of art. The church of this palace, now *S. Apollinare Nuovo* (originally *S. Martino in Cœlo Aureo*), is still well preserved. Its rich and exquisitely-designed mosaics are among the most magnificent and dignified works of Christian art. Twenty-four marble columns with capitals which show traces of the Corinthian style, and those imposts which are the reminiscences of the

ancient vestibule are united by arches and support the upper walls of the nave which are pierced with large windows above the roof of the side-aisles. The Ostrogoths were Arians, and this was their principal church. Their episcopal church was S. Teodoro or S. Spirito, a smaller one near which was the Arian baptistery, now Sta. Maria in Cosmedin.

The Tomb of Theodoric, which he built during his life and in which he was buried in 526, is a circular chapel whose flat dome is formed from a huge block of stone—an imitation of the massive blocks with which the Germans covered the burial-chambers of their heroes. A row of columns surrounded the structure, which stood upon a lofty substructure containing the uniform sepulchre. Broad flights of steps led up to the chapel.

The Church of S. Vitale at Ravenna was commenced in 526, the year of Theodoric's death. It was finished in 547, though the rule of the Ostrogoths had ended in 540. It is an octangular domical structure with a vaulted aisle around it and a vaulted gallery above the aisle (*pl.* 15, *fig.* 4). Eight enormous piers, with their arches, bear the cupola. The eastern intercolumniation is lengthened into a chancel, while the other seven have domes like those which in the thermæ are set between the piers in the principal room (comp. *pl.* 12, *fig.* 2), and which are especially common in classical architecture. The arrangement is similar to that found in the Temple of Minerva Medica at Rome, except that here the half-domes stand above a double series of arcades, which bear the thrust of the vaulting of both upper and lower aisles. Julianus Argentarius directed its construction, and also built, in 534, the great Basilica of S. Apollinare, in the suburb of Classis, finished in 549. The exterior and a section of this largest of the Ravenna basilicas are given on Plate 14 (*figs.* 4, 5).

Works of Justinian.—A grand building-era opened in the year 527, when Justinian ascended the throne of the East. The scene of greatest activity was Constantinople, where Justinian in this year began the construction of SS. Sergius and Bacchus (*pl.* 15, *fig.* 5).

Church of Sta. Sophia.—One of the most magnificent architectural structures—whose spacious area, doubtless, is not equal to that of the great basilicas of Rome, but which in its design and in the grandeur of its parts is arranged with such extraordinary harmony that the majestic impression produced by the interior is not surpassed by any other church—is Sta. Sophia at Constantinople, which as a mosque is still the chief place of worship of that city (*figs.* 6–8). The church built by Constantine (see p. 90) was in 532, during a popular riot, delivered to the flames; and forty days afterward the emperor had laid the corner-stone of a new edifice. Thousands of artisans toiled at the structure, which was carried on under the direction of the architects Isidoros of Miletos and Anthemios of Tralles, famed for their abilities and for their mechanical and physical knowledge. It was completed in 537, and at the sight of it the emperor joyfully exclaimed that he had surpassed Solomon. A few years afterward an earthquake partially overthrew the

edifice, but the emperor set to work with renewed zeal, and under the direction of the younger Isidoros, the grandson of the now-deceased architect, it was strengthened, beautified, and improved.

The building was destined to be monumental; no wood was allowed to enter into its construction, and thus naturally a grand dome formed the centre of the design. But the circular form was not desired, and therefore the dome was by means of four pendentives set upon a square base, which on two sides was enclosed by half-domes of less elevation. From these half-domes small semicircles projected; so that a nearly quadrangular nave resulted, from the eastern extremity of which the chancel apsis projected.

Wonderful is the intelligence displayed in the statical system that supports the lofty dome, bewildering and charming the effect produced by the many-colored pillars down to the mosaics and inscriptions on the walls. The edifice was a work of wonder; its fame spread from the East to the West, casting into shadow the greatest deeds of the emperors. Not only did it exercise the architects and the emperor, it was also a public affair. All classes took part therein; public prayers were offered for the success of the undertaking; the materials were brought from all parts of the empire: Rhodes furnished tiles for the construction of the dome, while Rome, whose ancient monuments at that time served as a quarry in spite of Theodoric's prohibition, contributed its marble columns. Justinian did not omit to beautify the surroundings. A fore-court with porticoes led up to the structure, and on the south—which in our illustration is left free in order to display the outline of the building—extended the Augusteum, a plaza surrounded by porticoes, set with magnificent public buildings, and adorned in its centre with the equestrian statue of the emperor upon a mighty column.

Justinian's activity extended throughout all parts of his wide empire; Procopius has filled an entire book with descriptions of the emperor's buildings. He sought also to extend the limits of the empire. Italy, the mother-land of Roman authority, must no longer remain in the hands of the barbarians, but the Eastern Empire through its addition must again become the Roman Empire. Although a certain part of Italy was conquered, since Ravenna, the capital of the Ostrogoth Kingdom, fell into the hands of the Eastern Romans and became the seat of the exarchs, the representatives of the Emperor, yet the Lombards resisted the power of the Greeks until the eighth century. To the sixth century belongs the Basilica of S. Lorenzo fuori le Mura at Rome, as well as the Cathedral of Parenzo in Istria, which is also a basilica with a fore-court and baptistery.

In Syria a series of columned and pillared basilicas of the sixth century is preserved, the character of which is apparent from Figures 1-4 (*pl.* 13). The most important are those of Kherbet-Hass, El-Barah, Deir-Seta, Tourmanin, Baquoza, Behio, and Qualb-Louzeh; the latest of these buildings bears the date 565. Soon after this the population abandoned the

land before the onslaught of Islam, and very recently those ancient structures have been discovered almost intact.

If we cast a glance at the ornamentation of this period, which as Christian-Roman we may contrast with the earlier Pagan-Roman, we shall see still more that decadence of the sense of form which we have noted in the works of the Diocletian period (p. 91). At the same time, a multitude of new forms and *motifs* springs up; the capitals of the columns in particular acquire manifold variety (*pl.* 13, *figs.* 5, 6; *pl.* 14, *figs.* 7-10). In general, we can say that the Greeks still remained the proper possessors of architectonic sculpture, and that wherever they worked the form-sense did not diminish; that though the ancient repose and regularity which were breathed by the conventional decorations created eight hundred years earlier had given place to florid fancy, still a certain nobility and a fine energy of outline were not lacking (*pl.* 13, *fig.* 7). Where other influences were as powerful as the Grecian, where the descendants of a generation which had only lately received its culture were active, there, certainly, the ornamental detail was often dry, rough, and crude.

The more the Germanic races fortify themselves in Italy during the seventh and eighth centuries, the more degraded becomes the once-classical culture of the country. Ruins multiply; whatever is newly fashioned stands, both in an artistic and in a technical sense, far beneath the works of the earlier centuries, the mighty ruins of which are made to serve for the erection and adornment of new structures. Rome preserves from the seventh and eighth centuries the basilicas of Sta. Agnese, S. Giorgio a Porta Latina, and Sta. Maria in Cosmedin; at Torcello, near Venice, stands the cathedral, erected in the seventh century, a basilica with eighteen columns of Proconnessian marble; and the Old Cathedral of Brescia, a circular structure of nearly 12 metres (39 feet) diameter, of sufficiently crude execution, is of the same period. The ornate Church of Sta. Fosca, on the island of Torcello (*pl.* 15, *fig.* 10), may be somewhat later.

II. OFFSHOOTS OF CLASSIC ART.

I. THE SÁSÁNIAN STYLE.

Historical.—After the dismemberment of the Macedonian empire the Seleucids ruled Persia until 246 B. C.; after them came the Arsacids, who founded the Parthian Kingdom, which lasted until 229 A. D. Its relations with the Greeks, and afterward with Rome, made the land accessible to the Greek culture of the age, though it did not become a province of Rome. But under the Sásánians there was developed a peculiar art of which we must take some notice. The Sásánian monarchy, the romantic epoch of Persia, lasted from 229 A. D. to 636 A. D., when the Arabs brought the land under their sway, at once put an end to the fire-worshipping cult, which had been the basis of the Sásánians, as

well as to Sásánian art, and, together with the sway of Islam, planted Islamitic art throughout the land.

Khosrau II.—The principal theme of Sásánian history is the struggle with the Romans until Khosrau (Chosroes) II. Parvéz, "the Conqueror" (died 628 B. C.), who is known in Christian legend, after subduing Syria, Asia Minor, and Egypt, threatened Constantinople itself, but was overthrown by the emperor Heraclius. Khosrau is the hero of folk-lore, and his love for his Christian spouse, Shírín, and their relations to their architect, Firduz, have occasioned the most beautiful and poetical narrations. The architect has rightly received his place on the roll of fame, since Khosrau erected magnificent structures which to a certain extent excited the imagination of his contemporaries and have not ceased to be admired by their posterity. The splendor of his palace has been extolled by visitors and poets, and grave historians speak minutely of its adornments, of its forty thousand columns, of the contents of a hundred subterranean vaults, and of the beauty of its paradise, or park.

The Architectural Remains of the Sásánians, so far as they have been investigated, certainly teach us little concerning the splendor described by poets and narrators. Their style is essentially a barbarizing of classical architecture, which under the influence of untutored fancy was compelled to harmonize with the ancient national Asiatic elements.

Characteristics of Sásánian Architecture.—The cupola plays the chief rôle, not as a low half-sphere, as it exhibits itself in classical architecture, but in high elliptical forms similar to those which we find in ancient Assyrian reliefs. While the principal halls are roofed with such cupolas, the adjacent rooms are ceiled with elliptical tunnel-vaults. Externally, flat roofs appear, from which rise cupolas of different heights. The walls had their surfaces richly moulded with blind arcades and niches which did not form an organized system. The details were crude: columns without base or capital are abundant; among the rest are capitals exactly like those of the post-Roman period of the sixth and seventh centuries in Italy. Some of the kings invited Greek architects into the country.

Khosrau I.—surnamed Anósharvân, "the Blessed"—was so impressed with the beauty of Antioch, which he had conquered, that not far from his capital, Ctesiphon, he built a new city (Khosrau-Antiochia) which was as exact a copy of Old Antioch as possible, and was a notable tribute to the superiority of Roman culture and life. The inhabitants were established in comfort and had religious freedom, and even a Christian mayor. They retained their national manners until the fall of the empire. Chariot-races, for example, were as popular as they had been in Old Antioch.

There is here the irresistible tendency to copy the already degraded classical architecture just as it was exhibited at the same period, and even two hundred years later, by the Germanic peoples in Italy and Germany, both overrun by barbarism; but in Persia, through the Oriental high dome and the general application of the elliptical arch for large openings, the works were endowed with a peculiar character.

2. THE ARCHITECTURAL ART OF THE FRANKS AND OTHER GERMANIC RACES.

Roman civilization had spread its branches over the Alps; Gaul and a part of Germany were Romanized. For centuries in contact and in commercial relations with the Romans, the Germanic races became to a certain extent acquainted with Roman culture. As the migrations of the races continued and the overthrow of Roman authority was accomplished, a large proportion of the Roman cities in Germany and France were destroyed and many ancient architectural monuments were annihilated. But a series of cities had become so essential for the purposes of general commerce that exist they must, and after each destruction they necessarily rose again from their débris and ashes, whether Romans, Gauls, Germans, or whatever race, dwelt in the vicinity. In them still existed a remnant of classical culture. Christianity not only converted those Germanic races which resided upon the soil of the old classic culture, but, spreading far beyond, also despatched its missionaries into the most distant wildernesses and everywhere sought for disciples. With it went such remains of classical culture as were accepted by the Church, and wherever the authority of Christianity extended, the people, even those of the far North, soon stood upon the same level of education as the Teutonic race which ruled in Italy. We have accounts of the constructive activity that reigned in Gaul, upon the Rhine, and on the Danube from the sixth to the eighth century. Few remains have come down to us, and the dates are uncertain.

Buildings of the Fifth and Sixth Centuries.—Gregory of Tours tells us of a church dedicated to St. Martin, built by Bishop Perpetuus at Tours in the second half of the fifth century. This was 160 feet long and 60 feet broad, and had one hundred and twenty columns. At the same time Bishop Namatius also built at Clermont-Ferrand a cruciform church which was decorated with marble and mosaics; it was 150 feet long and 60 feet wide, and had seventy columns. In the second half of the sixth century the cathedral at Châlons was built, and adorned with columns, many-colored marbles, and mosaics. Gregory of Tours himself at the close of the sixth century renovated the cathedral of his episcopal see, built by Perpetuus, erected a baptistery, and restored the Church of St. Perpetuus, and also another, whereof he informs us in his history of France. About the middle of the sixth century Archbishop Nicetius of Treves erected near that city, upon the elevated bank of the Moselle, a castle which had three storeys and was adorned with marble columns. He also restored the cathedral there.

Buildings of the Seventh and Eighth Centuries.—At Riez and Aix-le-Bains exist baptistery-like round buildings each having eight antique columns in its interior. The cathedral at Vaison, with antique friezes on the outside, is considered a structure of early Christian design. The Baptistery of St. John at Poitiers belongs to about the eighth century.

In Cologne the so-called "Roman Tower" near St. Claren is an example of many-colored wall-incrustation, such as may be seen also on the façades of the churches of Savennières, Vieux-Pont, St. Eusebius at Sennes, etc.

The Convent of Fontanellum, near Rouen, was a regular city of churches and conventual buildings. The Church of St. Peter, above 80 metres (262 feet) long, also that of St. Paul, and a third, dedicated to St. Lawrence, were built in the middle of the seventh century. Out of the ruins of the neighboring Juliobona the materials for the construction of St. Michael's Church were brought in the eighth century; then followed a Church of St. Servatius and three other churches. Dormitory, refectory, cloister, chapter-house, abbot's residence, hall of records, and library, symmetrically arranged near these churches, and monumental with rich art-decoration, formed the nucleus of this city-like aggregation.

Decadence of Architectural Art.—However rich and magnificent such structures may have appeared to the historians, yet their poetical descriptions cannot delude us nor hide from us the decadence of grandeur in the whole and of artistic feeling in the details. Here we have the last survivals of the magnificent classical style. Whence could the material means be procured to construct such works as were erected by the Roman emperors? How within the boundaries of Christendom could bishop or abbot obtain the genius necessary for the conception of such grand fabrics as would naturally spring into existence in the brain of a Roman ruler of the world? Where among their small surroundings could be educated masters whose skill could compare with that of the Greek artisans whose hands were guided by the strongly-rooted teachings of centuries of generations? The great world had become a small one, since in the West each individual Teutonic tribe formed an independent kingdom; nor did it become greater until the Franks subdued the other tribes and little by little became the centre of the Western World, the champions of the civilization of the Christian West.

Architectural Revival under Charlemagne.—Yet once before its final extinction the light of ancient classic culture flared up, though only to show how near it was to that extinction. As once Theodoric the Great sought to infuse new life into the dying art of Rome, so did Charlemagne attempt to re-establish the Roman empire and to give the world a new period of art-prosperity. His capital, Aix-la-Chapelle, was the wonder of contemporaries, who celebrated it as the new Rome. For the adornment and decoration of this city he plundered the ancient Rome as well as Ravenna, which we may call the third Rome if we style Constantinople the second. But only in the fancy of flattering poets did this fourth Rome attain to the magnificence and splendor of either the first or the second.

Works of Charlemagne.—The most prominent works of Charlemagne were the palace and the minster church, which, as the palace chapel, took the polygonal form (*pl.* 15, *figs.* 1, 2), and thus carried on the antique

tradition; it was built (796–804) by Abbot Ansegisus of Fontanellum, and now exists, but robbed of its mosaics, in the midst of many additions and accessory buildings of a later date. The emperor, who died 814 A. D., was buried here. Nothing has been preserved to our time of Charlemagne's palaces at Worms, Ingelheim, Nimeguen, and other places. A little later than the minster at Aix-la-Chapelle is the Church of St. Michael at Fulda, built by Abbot Eginhard and dedicated in 822. It is a small circular church with eight strongly-tapering columns.

Buildings of the Ninth Century: Eginhard's Works.—Eginhard (born 770, died 844), one of Charlemagne's friends and his biographer, was skilful both in literature and in architecture, and in particular earnestly studied the works of Vitruvius. He built an imposing church at Michelstadt, in the Odenwald, also the Abbey of Seligenstadt, the ancient plan of which was not long ago brought to light, but unfortunately was at once completely ruined. The portico of the convent at Lorsch is a unique building with colored incrustation which perhaps dates from the time of the convent itself (764–774), but may be one of Eginhard's works, or even a work of the end of the ninth century. The still-preserved plan of the Abbey of St. Gall (see Vol. II. *pl.* 39) is a most remarkable work of this period; it was made in 820 A. D., and the building itself followed between the years 822 and 830 or 832. The architects were the monks Winihard and Isenrich, whom their contemporaries praised as the Dædalus and the Bezalcel of the age.

Although the Renaissance wrought by Charlemagne was of short duration, yet under the succeeding princes of his race many buildings were erected in a more and more degenerate style. We cannot mention these individually, whether built in England, France, Spain, or elsewhere, but we must once again direct a glance toward Italy, especially to Rome, where several churches still extant were erected in the ninth century. Among these are S. Clemente, with its fore-court surrounded by Ionic columns (*pl.* 14, *fig.* 6), and S. Prassede, in which piers are alternated with the columns bearing massive arches which vault across the nave and thus securely bind together the two side-walls. At the end of the ninth century followed the rebuilding of the Lateran basilica (*fig.* 1), essentially upon the same plan as the older building. Other basilicas of this period in Rome are S. Bartolommeo in Isola, Sta. Maria in Ara Cœli, and S. Nicolò in Carcere.

3. THE BYZANTINE STYLE.

Though Rome ruled the world, it flattered the Greeks and so appreciated their culture as to model its own upon it. Rome gathered Grecian art to itself and spread it wide over the globe. The Greeks were proud to know that they ruled the world-ruling Romans, that they were the only source from which both art and knowledge flowed, and that whatever others performed was but the outflow of Greek genius. In their intellec-

tual pride they completely overlooked the fact that to them all impulses had come from without.

When Roman authority was no longer centred at one point, when the armies in the provinces made and unmade emperors, Constantinople became for the ancient Grecian countries a new centre which at once emulated Rome and rose higher in proportion as Rome declined. When the Western Empire fell, the Eastern emperors aspired to rule the world, sent their armies into the West, and reduced part of Italy; yet they were soon compelled to abandon it to the barbarians, to confine themselves to Greece and that part of Asia which was not torn from them by the inpouring tide of Islam, and to fall back upon the barbarous races which inhabited the part of Europe to the north of them, and which first received Christianity and civilization from Constantinople.

The Greeks preserved a goodly heritage from the Roman Empire, both in the bureaucratic organization which Rome's administration had introduced into the East and in the preservation of the throne of the Cæsars. Their pride led to ignorance; their ignorance, to vainglory: they accounted themselves the only possessors of civilization, the only guardians of the grand old traditions; and, since they could not rule the West—since the powerful barbarians had overthrown the Greek authority there—they abandoned it and resolved to build for themselves a world in the East. Even that spiritual bond which united the churches of the East and the West was more than their pride could bear, since its metropolis was not at Byzantium, but at Rome. That bond must be broken. The Church, which was in the West an independent power, must in the Orient become an instrument in the hands of an irresponsible emperor, or, rather, a slave to Byzantine forms and ceremonies by which even he was controlled. No new life ruled in this state: it was the old administrative machine. It was the might of conventionality that upheld the state—that, as step by step advancing Islam sprang forward upon the booty, held the remains together, until finally the Turks planted their victorious banners on Constantinople and the Crescent became the terror of Western Europe.

It is hard to fix a point at which the Empire ceases to be the Eastern Roman Empire and begins to be specifically Byzantine, since the rule of empty formalism creeps in little by little. Justinian, the mighty and powerful monarch who aimed to unite the East and the West, and who ruled knowing the ancient traditions yet worked beyond them, cannot be called a Byzantine: he was thoroughly Roman; yet what he executed formed the direct groundwork of Byzantinism. This relation is apparent in the architecture of the time. While yet the union between the East and the West stood unbroken, when the Ostrogoths had become Romans and their style of architecture was Roman—or, rather, Grecian—Architecture followed the same course of development in the East and in the West.

Domical Churches: Church of Sta. Sophia.—Justinian's great work, the Church of Sta. Sophia (*pl. 15, fig. 6*), is a member of that series of

buildings with a lofty circular centre which existed equally in the Orient and in the Occident, since Agrippa built the Pantheon at Rome and thus set up its first and still extant link. Yet Sta. Sophia is not a simple circular church: the longitudinal form also permeates it. In it the problem of dome-support is solved; so that the cupola need no longer be raised upon a circle or a polygon, but by means of four pendentives carried upon a square base, and by combination with barrel-vaults and cross-vaults, may be arranged to suit any specified ground-plan. In this way a grand monumental freedom of the rectangular plan through a continuous series of cupolas and the monumental execution of the domical central building were at once accomplished. In this sense Sta. Sophia is the unequalled model and the foundation of all Byzantine church-architecture, which brought the old indigenous, primitive Oriental dome again into application on the basis of the arrangement of that grand edifice.

Church of Sta. Irene and Others.—Soon after Justinian the last remnants of the antique classic language of forms passed away completely. Thus, Sta. Irene at Constantinople (*pl.* 16, *figs.* 1, 2) has already a thoroughly longitudinal system, since two cupolas separated by an arch form the nave, which terminates eastward in a half-dome, while broad transverse arches form a system of buttresses for the cupola and also compose the side-aisles, in which, as in Sta. Sophia, cross-vaulted galleries borne on small piers are included. The structure is ascribed to the ninth century. Among the churches built in this manner is one at Cassaba, in Asia Minor, the nave of which has only a single cupola, while three wide barrel-vaults strongly accentuate the longitudinal direction. The Church of St. Clement in Ancyra (Angora) has also one dome. In both these the side-aisles are not entirely included within the buttresses of the cupolas, but extend beyond these for a considerable width, are vaulted, and bear a gallery above. Both agree with Sta. Sophia in having no wooden roof above the vault to protect it from the weather, which is not there subject to great vicissitudes.

Royal Palaces.—The magnificent palaces of the Byzantine emperors, the mansions of the rich, and almost all the public buildings have, together with the dwellings of the middle and lower classes, disappeared both in Constantinople and in the provinces of the empire. In Constantinople still exist the interesting remnants of the Hebdomon, a palace erected by the emperor Theophilus (829–842) and adorned externally with colored bands of alternate brick and marble. The pendentives above the great arches are filled with various patterns; portions covered with green glaze increase the play of colors. Historians give prolix accounts of the magnificent buildings of the imperial palace proper, also of a summer residence called Bryos, which was constructed in Saracenic fashion, and of various mechanical devices executed partly to delight the people and partly to impress foreign ambassadors with exalted ideas of the power and importance of the emperor.

Works of Basil.—Architecture flourished anew under the sway of Basil

the Macedonian, as well as under his grandson, Constantine Porphyrogenitus, who was himself an artist and also an author and a patron of literature. In Constantinople alone Basil either built, restored, added entrance-porches or roofs to, or decorated externally or internally, more than one hundred churches. The historians particularly mention SS. Gabriel and Elias, which had five cupolas.

Agia Theotokos, "Church of the Mother of God" (*pl.* 16, *fig.* 6), constructed about 900 A. D. and restored in the twelfth century, is in its arrangement a notable example of the customary ecclesiastical architecture of the tenth to the twelfth century. A small cupola is borne on four piers; four broad barrel-vaults form a cross, and the angles are filled in with smaller domes, which spring from a somewhat lower level than the principal dome. There is also a dome above the entrance, and an outer entrance-porch with five domes stands in front of this. At the east end there are a principal apse and two side-apses.

St. Bardias at Salonica (937) and the still later Church of the Apostles at the same place are similar; in these all the cupolas are visible exteriorly. The small Church of St. Elias at Salonica was built in 1012. Greece especially contains many small churches, some of which have one dome, others a great number of domes. We give examples on Plate 16 (*figs.* 5-8, 10-13) from which the character of this church-architecture may be clearly comprehended.

Byzantine Art in Venice: St. Mark's.—The most splendid manifestation of Byzantine architecture meets us outside Greece in the Republic of Venice, which may really be called a Byzantine colony, since the perpetual commerce by sea with the Orient, and especially with Byzantium, naturalized Byzantine culture in the lagoon-city. St. Mark's, commenced in 976 and after almost a hundred years of labor finished in 1072, is one of the most important monuments of the Byzantine style. A Greek cross bears five cupolas separated by broad barrel-vaults. The principal piers, against which these vaults abut, are pierced with openings. Three sides of the western arm of the cross are surrounded by a portico, while the eastern arm is closed with an apse (*fig.* 3). The interior additions of following centuries have obscured its original character, and made it, as it now appears (*fig.* 4), one of the most richly-colored and fantastic of works. Its great glory within, says Fergusson, is the truly Byzantine profusion of gold mosaics which cover every part of the walls above the height of the capitals of the columns, and are spread over every part of the vaults and domes. Without, its great beauty consists in the number of marble columns which surround and fill all the front and lateral porches.

Church of St. Front.—The Venetians sent colonies into Southern France, and thus at the end of the eleventh century the Church of St. Front (*pl.* 16, *fig.* 9) was built at Périgueux. Its arrangement and dimensions are nearly a copy of those of St. Mark's, but only the naked skeleton, without the play of colors, the fine variety of the details, or the rich adorn-

ment of mosaics and sculptures which characterize the latter. Numerous churches in the adjoining district follow the same model, although in detail they approach the style of the country.

Influence of Byzantine Art in Sicily.—In Sicily, Byzantine art has also left traces which show its influence through the rule of the Moors even to that of the Normans. Thus the Church of S. Giovanni degli Eremiti at Palermo (*pl.* 16, *fig.* 16) is a Byzantine design, and the domed Church of Martorana (*fig.* 15), built in the first half of the twelfth century, exhibits a completely Byzantine plan, the vault resting on four columns, while the interior is enriched with marble decorations and gold mosaics.

Byzantine Art in the Eastern Empire.—Among the structures erected in the Eastern Empire between the eleventh and fifteenth centuries may be named the following: the Church of Agios Pantokrator, of the twelfth century, at Constantinople; the Katholikon (*pl.* 16, *figs.* 12, 13), the Bishop's Church, the churches of S. Taxiarchis (*fig.* 11), St. Mary in the great convent, St. Theodorus, St. Nikodemus, and St. John, at Athens; St. Taxiarchis on Cythnos; the conventual Church of Daphne near Thebes (*fig.* 10); that of the Blessed Virgin at Mistra, in the Morea, etc. To the beginning of the thirteenth century, when Trebizond was an independent empire, belong some churches at that place, of which Sta. Sophia, having a baptistery and a bell-tower, is the most important.

While in Greece church-architecture continued unaltered until Turkish rule brought it to an end, it spread also northward into the neighboring lands—that is, into the Christian kingdoms upon the lower Danube—where it underwent certain modifications without any material change of the original plan. Thus, while in Greece the complete ground-plan forms a square, in these more northern churches the cruciform shape is apparent, and the arms end in polygons, like the eastern apse. An example of this arrangement, of very small dimensions, is shown in Figure 14, which represents the little Church of St. Mary on a height outside Semendria.

Powerful as was the Turkish sway, it did not extirpate Christianity among the conquered peoples: it only robbed them of the possibility of a progressive development and kept them for centuries sunk in ignorance, until finally, as in Greece, Roumania, and Servia in modern times, civilization took a new start. The restrictions under which Turkish domination held these peoples had yet the effect of preserving many elements of the pre-Turkish period through the intervening centuries; so that Byzantine church-architecture, though deprived of nearly all traces of its ancient originality, has come down to our time in the hands of rude masons, until latterly the invading Western civilization obliterated the last remains of the ancient style. In many districts the Turkish domination seems to have brought a certain development, as is shown by the church at Kurte-Ardshish (*pl.* 21, *fig.* 3), which displays a wealth of charming Mohammedan ornamentation and an execution which betrays the hands of workmen who had practised upon imposing Mohammedan mosques.

III. THE ARCHITECTURE OF LATER RACES.

I. INDIAN ARCHITECTURE.

India—the land of enchantment and wonder, lighted by the clear southern sky, endowed with magic beauty, embracing the grandeur of all climes from eternal ice to tropical verdure, possessed of stupendous mountain-ranges, of majestic forests, of mighty rivers, of broad and fertile valleys, as also of morass and desert of wide extent, teeming with Nature's most valued products, and enriched with a profusion of vegetable forms and a variety of animal life scarce conceivable—must in the earliest ages have tempted man to fix his abode within its bounds.

From the first the luxuriant richness of the land must have had its effect upon the inhabitants, and must have imposed its imaginative exuberance upon their civilization without especially accentuating it in an intellectual direction. It was not simply the charm of beauty that gave direction to the fancy of the people: the awe-inspiring solemnity and weirdness of Nature also had their influence.

Even in the earliest times we have here a developed and brilliant culture, but we are unable to follow it from point to point in chronological order or to ascertain the relative antiquity of each element. Old though the culture is, our historical knowledge of it is comparatively recent.

Dreaming, admiring, seeing and feeling the wonders of Nature, musing and striving for knowledge, and finding in that knowledge the highest happiness, yet seeking it with the imagination rather than with the intellect, the people of India lived on, perhaps for thousands of years, to other people a mystery as great as the land itself. The Greeks celebrated the wisdom of the Indian philosophers and from it derived their own.

Ancient Remains.—But as reverence for the past, for the fixed facts of history and its useful lessons, increases, so also slowly grows the desire to give it monumental expression—the longing to execute works which shall outlast time, which shall remain entire to distant generations and convey to posterity the fame of the age in which they were erected. The land is filled with the ruins of extinct cities, it is everywhere covered with the remains of temples, palaces, and other works, but these have not all been explored. Those with which we are acquainted point not to high antiquity, but to an age which must have been preceded by a series of stages before the works known to us could possibly have been executed. Where shall we find the first? They can scarcely be other than those which show relations with the ancient civilization of Western Asia; so that the origin of Indian architecture may well be sought there.

Literature and Chronology.—Far older than the monuments of the land is its poetry. The Vedas are a collection of religious narratives which go back to 1800–1500 B. C., and were brought into their existing shape in the seventh century before Christ. Somewhat more recent is the rhythmic book of laws of Manu. The great epics *Rāmāyana* and *Mahābhārata* were composed about 1000 B. C. Though poesy goes back so far, it is not until

the sixth century B. C. that reliable chronology commences. The oldest inscriptions on stone belong to the middle of the third century.

The Brahmanical Cult was in its fantastic and sophistical obscurity, in its voluptuousness as in its barbarity, the perfect outcome of the peculiar nature of the land and of the national character induced by it. Out of the primitive nature-worship it rose to the knowledge of one supreme God, in whom, as an impersonal, uncreated All, resided the totality of all knowledge and all happiness, and near whom circled personal gods who in great numbers peopled the Indian Olympus and were worshipped with fantastic ceremonies.

The Cult of Buddha, or Sakya Muni, King of Magadha, was a return to the simple naturalistic foundation. But even his time—which may have been about 600 B. C.—is variously given. He has become a hero of the imagination. In the time of Alexander the Great, whose entrance into India gives us the first authentic particulars, the two sects lived in friendly relations.

Buddhistic Art: Triumphal Columns.—Buddhism attained a greater importance in the middle of the third century B. C., when King Açoka became a convert and zealously sought its extension. The most ancient monuments extant appear to date from his time, and these exhibit a sufficiently primitive series of forms: they are the triumphal columns which King Açoka erected in great numbers throughout the Gauges regions in honor of the Buddhist creed. These columns are about 3 metres (10 feet) in diameter at the bottom and 13 metres (42 feet) high, and diminish at top to less than 2 metres (6½ feet) thickness. Capitals similar to the Persian and ornaments which recall the Assyrian form a termination upon which sit lions that resemble those of Western Asia. As Açoka's relations with the West are known, we may believe that the forms, and perhaps the idea for the erection, of the monumental works also came from that quarter.

Dhagobas or Topes.—Do we not also find in the second kind of structures an echo of Western Asia? Are the dhagobas (topes, stupas) echoes of the domes of that region? Are they not related to the stepped pyramids, the tombs of the great, of that more western land, which had a temple upon the uppermost platform? Do we meet again with the primeval tumulus in a fresh array? Or is it, as we are taught is certain, the water-bladder, with Buddha the symbol of the instability of all earthly things, that is displayed in the form of these buildings, as it is in the knob or umbrella on the summit of Buddha's symbolic fig-tree, under the shadow of which he delivered himself to meditation?

Açoka's Works.—King Açoka parted Buddha's remains into eighty-four thousand parts, distributed them among all the cities in the country, and ordained the erection of topes around them. These are hemispheres of masonry; at Bhilsa there is a group of thirty or forty, each built upon a low base, and usually surmounted by a platform. At the summit is a small globular structure (*ter*), a memorial emblem of Buddha's holy fig-tree.

Tope of Sanchi.—The largest tope of this group is near Sanchi (*pl.* 17, *fig.* 7); it has a cylindrical base 4 metres (13 feet) in height, on the top of which a platform 2 metres ($6\frac{1}{2}$ feet) wide surrounds the dome, the diameter of which is 40 metres (131 feet). The tee has disappeared from the summit, but at a distance of 3 metres (10 feet) from the base there is a stone enclosure which has four great portals placed in front of four openings; these portals reproduce forms that are usual only in wood-construction, which is here perfectly copied. Inscriptions upon this tope, which was ascribed to King Açoka, go back only to the commencement of the Christian era. The other topes of this group, which are described as somewhat progressive in their style, are far smaller. The next largest has a diameter of 14 metres (46 feet), while the smallest is less than 2 metres ($6\frac{1}{2}$ feet) across.

Other Groups of Topes.—At Amravati, not far from Madras, stands a large tope similar to that of Sanchi, and likewise surrounded by smaller ones. There is also a great number of topes in Ceylon. The *Mahavança* relates that for the Great Tope of Anuradhapoor, which King Dooshtagamani built about the middle of the second century B. C., a deep foundation was first constructed, composed of courses of stone, loam, bricks, crystal, mortar, and of iron and silver plates, and that the whole was trodden down by elephants. Upon this the tope was built, of bricks covered with stucco. There still remains a group of such topes at Anuradhapoor, the largest of which is supposed to be the great work of Dooshtagamani; this is placed upon a platform 140 metres (about 460 feet) square and rose to a height of about 80 metres (262 feet), but more than the half has disappeared. Some are still very well preserved. Other groups of topes have been discovered in Afghanistan as well as in Northern India, at Manikyala and Belur, all massive domes like those described. Their age cannot be very great, since their examination has brought to light Roman and Sásánian coins belonging to the period from 100 B. C. to the sixth century of our era.

Conventual Structures.—The topes do not stand alone: with them are grouped conventual structures, the most ancient of which, like the other buildings of the country, were probably of wood. The ascetic tendency, the love of meditation, which characterized the religious life of the Hindus must have suggested to many that caves in the mountains were suitable places in which to lead a life retired from the world, and thus the cave-life developed itself into a mark of religious fervor, and the cave itself into a monumental structure. At earlier periods it may have been necessary to widen a natural cavern to make its entrance regular, and sometimes, when it suited the inhabitants, to protect the roof by means of wooden beams and posts where the stone did not appear to be sufficiently secure. Out of this mode of living there developed a unique style of architecture which is peculiarly Indian.

Chaitya and Vihara Grottos.—Buddhism excavated two kinds of cave-structures, the Chaitya, or temple, and the Vihara, or monastery. The

most ancient known caves are those in the eastern mountains of the Ganges, near Rajagriha, the capital of India in the flourishing days of Buddhism. They are small and without any architectural ornament; the roof is vaulted, and they date, according to inscriptions, from about 200 B. C. The caves of Udayagiri ("Sunrise Mountain"), upon the north-east coast of Hindustan, are rather later, dating from the second century B. C. These are simple viharas with an entrance-portico of greater or less length in front, supported by strong pillars, the forms of which show the most exact translation of a simple massive wood-construction into stone; some are decorated with figures.

The Grotto of Karli lies east of Bombay, in a pass of the Ghauts. This is one of the most remarkable and oldest of the Chaitya caves; it is oblong, and is divided by two ranges of pillars into a middle aisle and two side-aisles. The end opposite to the entrance is semicircular, and the pillars run round it; so that the side-aisle is continuous round the end of the middle one. In the centre of the apse is a tope. The pillars have a massive sixteen-sided shaft above a plain base, a capital shaped like a hanging bell, and above the capitals figures of kneeling elephants with their conductors. Massive and solid though the entire details are, they do not belie their derivation from wood-construction; the repetition of the Persian columns with their capitals in the form of a hanging bell, together with the projecting figures of animals, do not leave room for doubt either that we have here a copy of the Persian or that a similar original construction has worked out a similar effect in the resulting forms. The vault rises above the columns in horseshoe-shape and is set with wooden ribs like the hull of a ship; the interior is lighted by a great semicircular window above the entrance. It is believed that the date of this grotto may be fixed in the second century B. C. Near it are a number of smaller unimportant viharas.

Ajuntah Chaityas.—At Ajuntah, in the north-west of the Deccan, upon a lateral valley of the Tápti, are about thirty Buddhist caves, the lowest situated 10 to 12 metres (33 to 39 feet) above the bed of the valley, while the most elevated are hewn from an inaccessible cliff 100 metres (328 feet) high. Some of these grottos are older than the Christian era. One of them is a great chaitya 30 metres (nearly 100 feet) long and rather less than half as broad, with twenty octangular pillars. The vaulting of the nave shows that here also wooden ribs originally served as a covering and protection. Though in most of the chaityas the side-aisles have flat roofs, originally of timber-construction (as their later copies hewn in stone prove), this chaitya has vaulted side-aisles, in which already the wooden ribs are represented in stone. Rather more recent (200–300 A. D.) is a smaller similar chaitya, while a third small but richly-decorated temple-cave excavated somewhere between the fourth and sixth centuries has seventeen pillars and is one of the most graceful of Hindu monuments. A fourth dates from between 700 and 1000 A. D.

Ajuntah Viharas.—Among the viharas—most of which have entirely

flat roofs—may be particularly noted one the central space of which, nearly 20 metres (65 feet) square, is surrounded by twenty pillars which copy woodwork in the most elegant manner; its date is between 400 and 600 A. D. Another (700–1000 A. D.) has twelve pillars in its square central hall; there are five cells on each side and three in the rear, the middle one of the latter leading into a second, beyond it. A portico forms a façade. Some of the grottos have wall-paintings of great beauty, while some are as yet unfinished.

Numerous Buddhist grottos occur upon the island of Salsette, near Bombay. The oldest date from the fourth or fifth, the latest from the ninth or tenth, century of our era.

Ellora Caves: Temple of Viswakarma.—The best-known as well as the most characteristic and beautiful monuments of Hindu architecture are the caves of Ellora, consisting of about thirty grottos of different sizes arranged in a semicircle within a space of a little more than a league. Some of these spread out into an extensive plan, while others are arranged in several storeys. The southern group is Buddhistic, like those hitherto described (p. 117); it culminates in the chaitya known as the Temple of Viswakarma (*pl.* 17, *fig.* 4), which dates from 600 to 900 A. D. This grotto has octangular pillars, above which, projecting bodily inward, is a sculptured frieze from which springs the stilted semicircular vault set with flat stone ribs. Several viharas surround this temple; among these, the Dehr Warra Cave is the most important.

Brahmanical Art: Grotto-temples.—At the end of the fifth century Brahmanism again became prominent, and occupied itself in monumental works. Toward the close of the tenth century it triumphed, and in the fourteenth century it drove with bloodshed the followers of Buddhism entirely out of India; they took refuge among other nations of Eastern Asia, particularly in China. Some of the Ellora caves are Brahmanical, as is at once apparent from their greater exuberance of fanciful detail. All the Brahmanical grottos are temples.

The Kailasa.—The mightiest is the colossal Kailasa, the true triumphal monument of Brahmanism—a vast court hewn out of the rock, with a huge mass left in its midst and hewn into temple-shape with an interior grotto; the exterior is adorned with architectonic forms in fantastic magnificence. We cannot be certain whether the accepted age (early in the ninth century) is correct, and think it possible it may be more recent. The ground-plan is presented in Figure 6. More recent, perhaps, is the Dhumnar-Lena Grotto (*fig.* 5), which is more severe in style. The Indra Temple (*figs.* 1–3) is ascribed to the twelfth century.

The most recent group of grottos is on the Coromandel coast, not far from Sadras, and is known as the Rathas of Mahavellipore ("the City of the Great Mountain"); these, which are of fantastic form, are ascribed to the thirteenth century.

The grotto-temples of Kailasa, Dhumnar-Lena, and Indra are detached buildings—small temples in the midst of the rock-courts. These, though

only masses of stone left standing and hewn into shape, like the architecture of the grottos themselves, give us an image of the forms which architecture employed for external decoration—forms in which even more than in the grottos luxuriance of decoration overwhelmed correct simplicity. Their characteristic shape is that of a pyramid of many low stages. Such structures often rise to a considerable height. Thus, near the last-named group of cave-temples rises a towering temple-building of stone of fanciful form. The Hindus call such temples “*vimanas*,” the Europeans, “*pagodas*.” The best-known and most celebrated is the colossal and fantastic Temple of Juggernaut, which is said to have been built in 1198 A. D.

Chalembaram Pagoda.—It is especially in the South of Hindustan that a wealth of forms the most capricious and fanciful finds expression in the pagodas. Most celebrated is that of Chalembaram, which encloses a lofty columned hall of considerable circuit, and is alike noticeable from its magnificent design and from the richness and artistic grace of its details. Travellers as well as pious pilgrims have wondered at the mighty stone chains which, worked out of the same block with the two massive stone pillars, reach from the staircase doors to the interior of the pyramid.

Little less famous are the pagodas of Canjeveram, Tanjore, Madura (*pl. 18, fig. 1*), Tiravalur, etc. Such a pagoda is an aggregation of separate greater and smaller halls and temples surrounded by one or more square walls, which are broken by tower-like, lofty pyramidal structures containing the entrances. Columned halls of several aisles with flat roofs alternate in the interior with steeply-rising pyramidal chapels, courts, and spaces planted with trees and flowers. The buildings are covered with sculptured figures of every kind. Gigantic halls called *choultries* (*fig. 2*), set apart for the reception of pilgrims, are characteristic accompaniments of the enclosures of these temples. (See p. 121.)

Jain Art.—A third sect, the Jains, have in the sumptuous structures brought the dome of the *topes* into fanciful but organized connection with the rich system of forms of Brahmanical architecture. Certain buildings of this sect may be of great age, but the most characteristic are quite recent.

Temple at Sadree.—The most flourishing period of Jain art is the fifteenth century, during the reign of Khumbo-Rana of Oudeypore, who built the temple at Sadree at the foot of the Aravulli Mountains. In the centre of the temple stands a shrine containing four niches below and four above, to which access is obtained through four magnificent halls, to which lead four principal entrances. The porticoes, borne on four hundred and twenty columns, spread around cruciform groups of five cupolas, most of them with hemispherical domes; but some (the central ones of each group) have a barrel-like shape.¹ Numerous chapels, all roofed with single cupolas, surround the entire group, which

¹ That is, like a barrel on end, a form peculiar to Hindu architecture.—ED.

both as a whole and in its details is among the most beautiful of Hindu buildings.

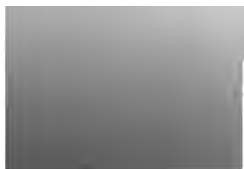
Islamic Influence.—It may doubtless be asserted that the influence of Islam—which had since the eleventh century spread widely in India—exhibited itself to some extent in these buildings, although Mohammedan structures earlier than the close of the sixteenth century are not known in that region. The cupolas which the Mohammedans built at a later period have another form; yet there are details which recall the Renaissance of the West in these late Hindu Jain temples, as in the Temple of Mount Abu, built of white marble and adorned with the most sumptuous figure-sculpture. Yet tradition places the erection of this structure in the year 1032, and attributes it to the princely merchant Vimala Sah.

Burmese Pagodas.—Mohammedan influence is undoubtedly evident in the buildings of Pegu, a province of British Burmah, where the pointed arch is employed in combination with vaulted spaces. The pagoda is a gigantic tope which, instead of the simple dome-shape, rises as a decorated pyramid of polygonal form, bearing on its summit a tall iron spire richly gilt. Such is the Pagoda of Khomadu, on the Irrawaddy, which stands upon a base 300 metres (984 feet) in circuit and is surrounded by an entire forest of lower columns, about eight hundred in all; it stands about 50 metres (164 feet) high. Still more stupendous is the great Shoëmadu Pagoda at Pegu, which rises from two mighty terraces to a height of 100 metres (328 feet) and has a diameter of 120 metres (395 feet). Its base is surrounded by a series of accessory pagodas 8 metres (26 feet) high.

Boro-Budor Temple.—In Java, about the fourteenth century, we meet with mighty Buddhist temples of which also the tope forms the groundwork. The grand Temple of Boro-Budor (*pl.* 18, *fig.* 4) is a pyramid of five terraces ascended by open staircases and set with four hundred and thirty-six niches with seated figures of Buddha. Upon these rise three broader stages, the lowest of which has thirty-two, the next twenty-four, and the highest sixteen small domed buildings enclosing sitting Buddhas, while a domical tope with a relic-chamber forms the summit of the whole.

Later Hindu Art.—Hindu architecture, though in our eyes extravagant and fantastic, persevered through many centuries in the use of the same tectonic principles, and built them into a complete system which prescribed a fixed law for every untectonic form. Though in some districts we can perceive an intermixture of Mohammedan forms, in others the true Hindu elements held on unmixed even to a late age.

The Choultry at Madura (*fig.* 2) is a specifically Indian work of considerable grandeur, begun in 1623 A. D. It has a hall divided into aisles by four ranges of pillars, one hundred and twenty-four in all, each hewn out of a single granite block. It is related concerning its erection that before the immense blocks which form the roof were raised into their place the entire interior was filled with earth. The beams of stone were



then pulled up the inclined plane, and the earth was removed after they were secured in their places.

Hindu art survived unruined the domination of Islam and has come down undecayed to our period; yet the rule of the English appears destined to bring both the religion and the art of this ancient people to ruin, though perhaps traces of their art may survive into distant centuries. What still exists that does not belong to our civilization falls into the province of Ethnography, and there the Hindu buildings of the present age may also be properly treated. (See Vol. I. p. 378.)

2. CHINESE ARCHITECTURE.

As the consideration of the existing art of India—the main trunk of the art of Eastern Asia—belongs to the province of Ethnography, so does also that of the chief branch of this stem; that is, the art of China.

Influence of Buddhistic Art.—The history of China goes back into hoar antiquity, but she received from India the religion of Buddha, here called Fo, and with it received Buddhistic art. Buddhism began to extend itself in China about 50 A. D., and continued to be the ruling religion until the thirteenth century, at which time other religions became re-established in their purity. That of Confucius particularly obtained great prominence, and at the present day the majority of its adherents are found among the educated. The people, brought under the sway of various outward influences, strove to assimilate all, and despite differing nationalities and religions built up a homogeneous civilization. In contrast to the Hindus, the Chinese may be called a philosophical people with whom imagination plays but an insignificant part.

Chinese Architecture.—Though utilitarian works have come down to us from an earlier date—as the great Chinese Wall, built early in the second century B. C. to protect the land against the invasions of the Tartars—yet we do not meet with the peculiar Chinese art until the period of Buddhism, of which it may be called the daughter. It is, however, a somewhat degenerate daughter, since the magic of poesy, which breathes in the imaginative works of India, is, like the varicolored scales of the wings of the butterfly that has been seized by the rough hands of a child, entirely taken away from her, and the varied tints of the lacquer which has taken its place do not give that glamour which poesy has spread over the art of Hindustan.

Temples or Pagodas.—The Chinese buildings have neither the imaginative aspect, the poetry, nor the awe-inspiring artistic *ensemble* of Hindu art; only its grotesqueness has remained. Yet the architecture of China is everywhere enriched by a variety of materials. Here, as in India, the principal structures are temples, called by Europeans “pagodas.” The Hindu tope has become a many-storeyed tower, each stage of which, ornamented with projecting colored roofs, is of smaller diameter than the one below it, until an incurved spire crowns the whole. All the angles of the several roofs are hung with bells. The walls are covered with porce-

lain tiles; all true architectural detail is wanting alike in the whole and in the parts, and its place is taken by rich ornamentation that covers everything. The best-known and most famous of these buildings was the porcelain tower at Nanking, erected in the fifteenth century and destroyed during the Taiping rebellion that broke out in Southern China in 1850. Temple-structures are here, as in India, surrounded by an enclosure, access to which is gained through gateways. One of these is shown on Plate 18 (*fig. 3*).

Secular Buildings.—Figure 5 gives an idea of Chinese secular buildings, in which wood is the leading material. Here, after thousands of years, we meet again with the tent building. The monumental structure forming an æsthetic whole does not exist in the brain of the Chinaman; the only field in which he manifests originality and skill is that of the minor industrial arts.

3. SARACENIC ARCHITECTURE.

As the patriarchs of the Old Testament had led nomadic lives long after other peoples had become settled, so the Arabians, who traced their descent from these patriarchs, continued their wandering lives nearly two thousand years later—not without culture, but with one the direction of which precluded the erection of any monumental works. Each family to a certain extent formed a state, which, however small it might be, maintained its independence, while its chief held all power in his hands; so that the individuals as well as the property of the family were absolutely dependent upon him. It was for poetry that they showed most susceptibility, and among a perpetually-wandering people who exhibited neither an agricultural nor an industrial activity poetry would naturally be fostered and ennobled.

As this life of independence prevented the formation of states such as had been founded by the surrounding peoples, so did it also prevent the formation of religious communities which in the sense of a Church would unite all the families in a common belief and in a common worship. As each family was its own state, so each followed the religion which it had chosen; and in the fifth century of our era Judaism and Christianity, the lore of the Magi and of the Chaldæans, sun-worship, fire-worship, and idolatry of every species, even in its crudest form, were spread abroad in Arabia.

None of these religions was sufficiently suited to the nature of the people to become generally followed, and yet deep piety formed one of their most characteristic traits; so that they listened greedily to every prophet: the more his teaching savored of the imaginative, the more inspired they believed him; and the more he claimed to be inspired, the more enthusiasm they evinced. Among this people Mohammed appeared as a prophet whose mission it was to promulgate a new religion which included in itself all that was consonant with the Arabian nature, and after a comparatively short struggle he succeeded in persuading all Arabia to follow his teaching,

and all to take sword in hand to conquer the world for this creed, the onset of which was like that of an ever-increasing tide, sweeping through every land. Persia was the first country overrun; the Sásánian, the first dynasty overthrown (649 A. D.). But when the Arabians conquered Persia and made this flourishing land a portion of their caliphate, they embraced the culture of the subjugated people, and we may consider Sásánian art, in connection with the few remains of the ancient Persian, as one of the main sources from which the elements of Arabian art were derived.

Swiftly burst the flood over Egypt, annihilating at once both the remains of the ancient native and the classical culture, but in its mighty rush it gathered many elements to itself. Through the whole of North Africa the inundation flowed, and thence to Spain, which was the first European nation to be overwhelmed. As in the West, so also it spread in the East, subduing a great part of Asia. But human egotism and the love of dominion would not permit Islam and the caliphate to achieve a permanent political union. Several independent kingdoms were formed, the individual importance of which was so great that, based partly upon the peculiarities of the peoples, they constituted independent schools of art. These were constituted in such a manner that the art of Islam does not present itself as a unit, no matter how many characteristic traits may have been held in common by all these schools; a consideration of their development leads us to investigate them separately in several countries.

Arabic Art: Seventh to Tenth Century.—The main stem was the art of the Arabs, who quickly rose to a high state of civilization, and in a comparatively short time developed a style which in imaginative-ness and magnificence approached the art of the ancient Persians, and in beauty and in the completeness of forms almost equalled the delicacy of classical art.

The oldest Saracenic structures are in Asia; the next, in Egypt. No sooner had the Arabians subdued Persia than the necessities of sway over a civilized land forced them to become civilized. The rude Omar must coin moneys, and for this the Sásánians furnished him models. For the reckoning of the year and other factors he employed Persian savants, and, where these did not suffice, Greek Christians. Even the public accounts were kept in Greek until the caliph Walid at the beginning of the eighth century ordained that they should be in Arabic.

The Kaaba.—The precursor of Arabian architecture was the tent. Some structures have come down to us from before Mohammed's time. Mecca has in the Kaaba a sanctuary that had been a place of pilgrimage for a long time before his day; Arabian tradition even recounts that Adam made forty pilgrimages there to offer his devotions. What form the structure may have had in Mohammed's time cannot be determined. If the form were monumental, it must have been Grecian, since at that period the Greek style had world-wide sway; or it was an echo of the old Persian. After his flight (622 A. D.) Mohammed constructed at

Medina a building which served at once as a place of worship and as the residence of his wives. We know nothing of its form; tradition states that it was supported on the trunks of palms.

Christian Churches Occupied by Mohammedans.—As the victorious Arabs became established in Persia and Syria they appropriated to themselves the Christian churches in those places which had been deserted by the inhabitants, and even shared them with the Christians where the latter remained. Thus for seventy years both Christians and Mussulmans passed through the selfsame door into the Church of St. John the Baptist at Damascus, the eastern part of which church Omar appropriated for the use of the Mohammedans, while he left the western part to the Christians.

Mohammedan Art in Syria and Palestine.—Since the Arabians trace their descent from the patriarchs, since Mohammed upheld the traditions of Judaism, and since even Christ and John the Baptist were counted among the prophets, the cities of Palestine, which were accounted sacred by Jews and Christians, were also reckoned worthy of honor by the Arabians, and, as Palestine had fallen into their power, Omar (638 A. D.) erected a mosque on the site of Solomon's Temple, which, before the Prophet had fixed upon Mecca, had been looked upon by him and his first followers as the place of their devotions. The four chief holy places of the Mohammedans were therefore always the Kaaba at Mecca, the Palm at Medina, the Olive at Jerusalem (the Mosque of Omar), and the Eagle at Damascus (St. John the Baptist).

Mosque of Omar.—The caliph Abd-el-Malek built the Mosque of Omar at Jerusalem in 688, employing Greek architects. The principal part of the existing structure is still adorned with mosaics of that age. (In 1022–1027 the cupola was rebuilt after an earthquake and newly decorated with mosaics; in 1187, Saladin adorned the cupola with gilded stucco ornament, and in 1528 windows with pointed arches were inserted, and the archivolts, which before were semicircular, were raised to the pointed form. Brilliant decorations of glazed tiles, stucco ornament, and glass-painting were added at various dates.)

Mosque el-Aksa.—Not far from the Mosque of Omar, Abd-el-Malek built the Mosque el-Aksa. This was finished in 692, and with numerous later additions and outbuildings now appears as a seven-aisled basilica, many portions of which still recall the Christian works of the period of its erection and the older period of classical architecture.

Mosque of Amru at Old Cairo.—Omar's marshal Amru made a victorious irruption into Egypt in 643, took the ancient capital, Memphis, and founded there a city which he named Fostat, but which later took the name of Old Cairo. There he built the mosque which still bears his name—a court surrounded by porticoes which are arranged so that there are six rows of arcades upon the side looking toward Mecca, while on the other sides there are one, three, and four respectively. But this also owes its existing condition to the caliphs Abd-el-Malek and Walid at the commencement of the eighth century.

Church of St. John the Baptist at Damascus.—After 705, when the caliph Walid had deprived the Christians of that part of the Church of St. John the Baptist at Damascus which Omar had left them, he rebuilt it with the aid of artists sent to him from the court of Byzantium. It now formed a three-aisled basilica with a transept, from the centre of which rose a dome the bold spring of which is said to have been a symbol of the eagle. The Holy Place is a small chapel which is famed as the burial-place of the head of St. John the Baptist. The materials of the building are Christian, and all the details bespeak the Greek style of the age. The north side opens by a nave into a large rectangular porticoed court. Three minarets are considered the oldest structures of the kind; one of them is named Jesus, because tradition tells us Jesus will upon the last day descend from heaven upon its summit.

Walid also rebuilt the Mosque of Mohammed at Medina and gave it the plan of a court surrounded by halls; the side looking toward Mecca, the Hall of Prayer (*Mehrab*), extends in several aisles.

Development of Architectural Forms.—The chronological development of forms among the Saracens cannot in many directions be exactly determined, since numerous later alterations have so changed the buildings that neither the forms nor the date of the original can be ascertained. That the starting-point of Arabian art was the late classical is proved by the facts cited above. The next source was ancient Persia. The entrance of new characteristic elements follows, as in other cases, gradually. We have stated before (b. III) that the exact time cannot be given at which Byzantine architecture acquired those characteristic forms which we cannot consider as belonging to the last period of classical art, but must regard as the beginning of a style that flourished in Greece through the entire Middle Ages and has continued until the present day.

The Stilting of the Arches of the ranges of columns and piers, so usual with the Arabs, may go back to the same source, and may have been introduced by Grecian architects. Or it may be that both in Christian and in Saracenic structures the use of older fragments, particularly of columns which fell short of the required height and were unlike one another, may have given frequent occasion for the high stilting of the arches; but certainly it was in great part a taste for proportions not classically symmetrical which sought by the lack of symmetry to gain the charm of novelty and that exercise of the imagination for which those classical forms had to a certain degree become too commonplace.

Pointed and Horseshoe Arches.—It would particularly suit the ideas of a people like the Arabs—who, overthrowing one world, sought to build up another—to found a style in which a greater liberty of fancy should take the place of classical formality. And thus a second form of arch, the pointed, which corresponded still more to the imaginative impulse, found its way into Saracenic architecture, and also a third, the horseshoe form, in which the lower portions of the arches turn inward, so that the

arches approach one another before they spring across toward the opposite columns.

Mohammedan Art in Turkey: Palaces.—Bagdad, founded in 766 by the caliph Al Mansúr, and finished in four years, was the residence of the caliphs and soon became the seat of Oriental elegance and learning. The Palace of Bagdad was so famous that even in the ninth century the Byzantines sought to rival it, and the Emperor Theophilus built a summer palace after the pattern of the caliph's seat. But, however sumptuous may have been the works of Omar's immediate successors, however brilliant even the structures of the Abbásids, nothing has come down to us. The mosque built by them in the eighth century was famed for its size and magnificence, as is also the case with others. We cannot make a picture out of the descriptions.

Mohammedan Art in Spain.—There still exist in Spain some structures of this period. In 711 the decisive battle of Guadalete gave the greater part of Spain to the Arabs, by whose emirs it was ruled, subject to the suzerainty of the caliph. About the middle of the same century the Abbásids overthrew the more ancient caliphate and killed its members, but one individual, Abderrahman, escaped, and succeeded in maintaining himself as ruler of Spain independent of the new caliph of Bagdad. Here also Christian churches were at first used as mosques, as at Cordova, the capital of the Spanish caliphate.

Mosque at Cordova.—The ancient cathedral was first used in common, but about 785 or 786 the Christians, after receiving a pecuniary indemnification, were excluded, and a new building was begun. The grandiose works of the Romans in Spain had excited Abderrahman's admiration, and he resolved to surpass them; to effect this there was no better way than to plunder them. From every part of his dominions he collected antique columns. If old capitals could not be found, Roman capitals of a later period were imitated, and the hastily-built structure was in twelve months carried to completion. It is a court surrounded by porticoes, the side devoted to the prayers of the faithful forming a regular forest of columns, originally more than a thousand in number. (Under Abderrahman's son Hescham, as well as under Hakem II. and Hescham II., at the close of the tenth century, it was considerably enlarged and decorated. In 1146, Cordova was taken by the Christians, and remained in their hands; the mosque became a church, and subsequently a regular church was built within it. The ground-plan (*pl.* 21, *fig.* 4) shows the various extensions, and the perspective (*pl.* 20, *fig.* 1) exhibits the richly-decorated later part.)

Cordova soon became a brilliant capital. Art and Science made their seat here, and the Arabs, who but a few hundred years before were cultureless nomads, had soon gathered together and put to use all that survived of the ancient Roman culture. So fine an appreciation of the æsthetic took hold of them that their works, instead of exhibiting merely fantastic splendor, became instinct with elegance and regularity of pro-

portion combined with extreme richness, while the fulness of the most delicate poesy shone in all their creations.

The Arabs of the West emulated those of the East; and as Bagdad had relations with Byzantium, so also the caliphs of the Western Empire connected themselves herewith, and repeatedly in the course of the ninth century Cordova saw within its walls a brilliant embassy from the Eastern Roman emperor bringing as presents the products of Byzantine art. Though the Arabs might not in certain directions be able to equal these, yet they strove hard to reach, and even to surpass, their model.

The characteristics of Arabian art seem to have been evolved in the ninth and tenth centuries. Even though the separation of the East and the West, the uprisings and the wars, the formation of new states, the decadence and the fall of others, left no trace of the political unity of Islam, the brilliant civilization which the Arabs had acquired, and which was the only living civilization of the age, was still at home wherever Mohammed was honored as a prophet.

Mohammedan Art in Africa.—After Egypt was subdued the Arabs pressed farther westward in Africa, defeated the armies of the Byzantine emperor, and after a long struggle entirely annihilated the Mauritanic tribes, which had been only driven back by the Romans. The last remnants of these tribes were completely absorbed by the conquering Arabs. Independent dynasties soon rose here, as the caliphs were too far distant to be able to uphold their suzerainty. Among the various small princes who here made themselves independent, the emirs of Kairwan were the most considerable, and their city, not far from the present Tunis, enclosed a mosque founded by Okba in the seventh century, but entirely rebuilt in 830. It has seventeen aisles, and the roofs are carried by four hundred and fourteen columns, most of which are antique.

Mosque of Ibn Touloun.—The sumptuous Mosque of Ibn Touloun, in Cairo, the seat of the Fatimite caliphs, was a work of the ninth century. It is a court begirt with arcades in which rectangular piers are united by pointed arches which exhibit a slight horseshoe incurvation at their springing. The piers have a slender colonnette at each angle. There are two rows of arches on three of the sides, five on the fourth. Though all the leading details are severe and simple, the ornamentation exhibits that graceful play of forms which charms us so highly in the thoroughly-developed works of Saracenic architecture. The piers and arches are of brick covered with plaster, and the ceiling of the rooms is of beams. The tenth century gave Cairo the mosques El-Daher ("Flower Mosque," 980 A. D.) and El-Ashar ("The Splendid," 981 A. D.).

Conquest of Sicily.—Soon after the conquest of Spain, at the beginning of the ninth century, Sicily was subdued by the Moorish emirs of Kairwan, and, in the year 878, Syracuse, where the Greeks made their last energetic stand, fell into their hands. Palermo, which was first taken by the Arabs, flourished under their sway, and at the beginning of the tenth century had, according to the narrative of an Arabian

historian, three hundred mosques, one of which seated seven thousand men. It reached the height of its prosperity under Emir Abul Kasem (died 995). Here also the desire to acquire independence was the cause of the fall of Mohammedan domination. One of the pretenders summoned to his aid the Byzantine commander in Apulia, and the latter led into Sicily the Normans, who by the close of the eleventh century were lords of the island.

City and Palace of Az Zahra.—Abderrahman III. (912-961) had raised Cordova to its highest pitch of prosperity, yet this was surpassed by the new city Az Zahra ("The Blooming"), which he laid out on the Guadalquivir a few miles from Cordova and adorned with the most splendid palace, of which nothing is left to us but the enchanting descriptions of the Arabian narrator. The name of the city was that of his favorite wife. Thousands of columns of various kinds of marble for the palace were brought here from different regions; the Byzantine emperor sent one hundred and forty-six as a present, and even Rome contributed some of its own. Walls and floors were laid with marble, and the gilded and painted ceiling-timbers were of cedar. In the halls jets of water fell into beauteous basins, in one of which swam a wonderful golden swan sent from Constantinople, while round about it twelve other animal-forms sent forth as many jets. From the roof hung a great pearl, a present from the Byzantine emperor. The arches of the eight hall doors were of ebony and ivory inlaid with gold and precious stones. The size of the palace was as famed as its magnificence. It is said to have had more than fifteen thousand costly doors, and thousands of servants were needed. Beautiful gardens laid out upon terraces surrounded the palace, and contained enclosures for rare beasts of every kind.

Other cities also stood upon the Guadalquivir, on the banks of which were scattered magnificent gardens, pleasure-palaces, and villas. Nevertheless, Abderrahman employed Byzantine artisans here, as in his various other structures, in order to supply what the partial fancy of the Arabs could not invent; and thus we meet with various Byzantine forms in some works of this period, as in a chapel of the cathedral at Cordova, where interlacing foliage, egg-mouldings, and Corinthian consoles are united with Arabic inscriptions. While mosaics on a golden ground recall the basilicas of Ravenna, Arabian historians expressly mention that these were executed by Greeks.

Mohammedan Art from the Eleventh to the Fifteenth Century.—Up to this point we can follow the development of the architecture of all Islam, despite the political ruptures which shattered the unity of Mohammed's world-wide empire, and may consider the various races which had become Arabized through the reception of Mohammedanism as one and the same, even though here and there local peculiarities come into view. From the eleventh century these peculiarities come more into the foreground, since the entire development of Mohammedan architecture as a whole did not depend upon new constructive ideas so much as upon outward conven-

tional forms. Since, soon after the Crusades, the vicissitudes in Asia annihilated the caliphate of Bagdad, and nothing more exists of the monuments of this period in that region, we must consider the Egyptian edifices as the principal stem of Islamitic art, and can afterward follow its development in other lands.

Mohammedan Art in Egypt: Mosques.—In the eleventh century the Mosque el-Hakim was built at Cairo; in this the arcades stand on square piers which are joined by semicircular arches. In the twelfth century there was a decided effort toward a more formal development. The Mosque of Sultan Barkuk, erected in 1149, outside the walls of Cairo, contains a court surrounded by arcaded halls ceiled with simple small cupolas resting upon pointed arches with slender octagonal piers. These are constructed of regular courses of white and red carefully-hewn stone, forming a pleasing variety of color. It also comprises a number of pilgrims' dwellings, and on both sides of the sanctuary are stately domed structures—the tombs of the builder and his family. In them the ancient fundamental idea of the tumulus, which appeared also in the Western sepulchral chapels of the Christian-Roman period, particularly in the tomb of Theodoric, comes before us with fresh surroundings. Two minarets of slender cylindrical shape surrounded with balconies at various heights rise airily above the group of buildings.

Mosque of Saladin.—In the citadel of Cairo stands a now-ruined mosque which the famous adversary of the Crusaders, Sultan Saladin, built in 1171. This is interesting from the fact that the influence of the Christian architecture of the West, which at that period was already developed, was evidently brought by the Crusaders into the kingdoms which they established in the East. It has an entrance-court with porticoes on two sides only, while the principal hall has the form of a five-aisled basilica. Three rows of columns, each consisting of a single block of granite, are connected by simple pointed arches. The shape of the windows and many other details bring to memory the Christian architecture of the twelfth century. A cupola rises from a square plan on four pendentives of specifically Arabic shapes.

The Mosque of Sultan Hassan, founded in 1356, differs considerably from the other mosques of Cairo, since the court is relatively small, nearly square, set in the centre of the structure, and surrounded by four lofty walls instead of columns. In each of these walls opens a grand pointed arch leading to a gigantic barrel-vaulted niche, forming a regularly cruciform plan, the angles of which are filled up with numerous small rooms, which in consequence of the arrangement of the streets around composes a ground-plan of irregular shape. Beyond the largest of the four great niches is a square hall surrounded by massive walls and roofed by a dome borne upon the peculiarly Arabian pendentives formed of repeated corbellings. This is the sepulchral chamber of the founder. Near it stand, at equal distances, two tall octangular minarets elegantly designed. The entrance is a lofty niche in a large gate-house.

Mosques El-Moyed and Kait-Bey.—In 1415 was founded the Mosque El-Moyed, in which we meet again with the court surrounded by arcades (*pl. 19, fig. 1*), and here also are antique columns and capitals older than the building; so that the entire structure recalls the more ancient works. At the close of the fifteenth century (1483) the Kait-Bey Mosque at Cairo was erected, enclosing the sepulchral chamber of its founder. It is remarkable for a magnificent ornamentation of the most beautiful design, rendering it one of the gems of Mohammedan architecture; in the splendor of its decoration it rivals the richest Spanish structures. Nor did architectural activity cease with the close of the Middle Ages, since Cairo and other cities still contain a number of works built in later times, but into which few new elements enter, and which we cannot reckon as monuments; so here we will leave Egypt.

Architecture in Sicily under Norman Rule.—We have before mentioned (*p. 129*) that the luxurious architectural monuments erected in Sicily under Arabian domination no longer exist; but all the peculiarities of Arabic architecture, as well as of Arabic culture, were continued under the Normans after the overthrow of the Arabian domination. As at an earlier period the Christians were indeed overpowered, but were not converted into Arabs, so under the Normans the Arabian population with its culture remained, and even partially developed itself in the service of the Norman princes, who, recognizing the higher culture of the Mohammedan, were not slow to utilize it.

Influence of Saracenic Art in Sicily.—If we glance at the comparatively low grade of the art of the Christian kingdoms of the West in the eleventh century, it will appear that Saracenic art, though it had not then reached the fairy-like beauty of the fourteenth and fifteenth centuries, must have made a deep impression on susceptible minds. And the Normans were susceptible; otherwise the beauty of the land would not have induced them to reside there, otherwise with its stolen treasures they would certainly have returned in their ships to their native land.

Palaces.—King Roger built near Palermo two country palaces, Mineinum and Favara, in the Saracenic style, both surrounded with parks and ponds. His successors William I. and William II. followed his example, and an Arabian traveller of the time of William II. celebrates the magnificence of the mansions which surrounded Palermo, comparing them to a rich necklace adorning the throat of a maiden. From the reign of William I. (died 1166) dates the still extant Palace Zisa, and the Palace Kuba from that of William II. (died 1189). Both stand at a short distance from each other near Palermo.

The Palace Zisa is externally a severe and commanding structure of three storeys simply crowned with battlements, carefully constructed of squared stone, and adorned with pointed arches in which the windows are set. In the interior, behind a portico, is a magnificent square reception-hall of considerable height, with niches on three of its sides; these niches are ceiled with those many-celled vaults which we meet with in Spanish

buildings. The walls are covered with varicolored tiles and marble. Above the groined vault of the central hall was an open court by which the halls of the middle and upper storeys were lighted. A flat roof now covers the entire building, and windows broken in the niches of the outer walls light these rooms from without.

Palace Kuba.—Similar in every respect to the Zisa is the smaller but more elegant Kuba, the central hall of which was originally lighted by a cupola. There are some small chambers in this building, which was a place, not of residence, but of festivity, and was surrounded by many pavilions, one of which, a dome raised aloft on four pointed arches, is still extant.

The Palatine Chapel.—Even Christian churches followed the Arabian style in the Sicily of this period, yet were strongly influenced by the Byzantine, which had left its traces in the land, and to a less degree by the style of the West, of which the Normans themselves had brought the elements. The most famous of Sicilian churches erected in the Arabian style is the Palatine Chapel in the royal palace at Palermo, a three-aisled basilica erected 1129–1140. The aisles are divided by Corinthian columns connected by high-pitched pointed arches. The side-aisles had open timbered roofs, but the ceiling of the nave was of stalactitic Moresque work. Above the centre rises a cupola on high-pitched pointed arches. The walls are lined with marble tiles and bedecked with mosaics on a gold ground, in which the Byzantine and partly the Occidental styles predominate over the Arabic, which is evident only in the inscriptions and in individual details. An interior view of this church is given in Figure 3 (*pl.* 27).

More or less similar are the Cathedral of Cefalù (begun 1132), the Church La Magione at Palermo (1150), the cathedral itself (consecrated 1185), and the Cathedral of Monreale (1174–1189). The exterior of these churches is decorated with colored marbles. At the time of their erection they excited the admiration both of Arabian travellers and of Christians, and Pope Lucius III. says in a bull of 1182 that since the days of antiquity no work which could compare with the Cathedral of Monreale had been built by any king.

Mohammedan Art in Persia.—Particulars of the development of architecture in Persia between the eleventh and fifteenth centuries are almost wanting. The dynasty of the Búyids made Shiraz a brilliant capital in the tenth and eleventh centuries. At the same time the Ghaznavids, upon the Indian confines, inaugurated an era of architectural prosperity. In the thirteenth century the Mongols obtained the upper hand, and did not neglect architecture; some towers still exist that were erected by these either as tombs or as triumphal monuments. Here belongs the Tower of Yezid, near Teheran, ascribed to the fourteenth century. Towers crowned with cupolas are found at Erivan and Selmas. The tomb of Mohammed Khodabenda, at Sultanieh, is a dome-roofed building of the fourteenth century, octangular in form and richly

decorated upon its exterior. The mosque at Tabriz, built in the fifteenth century, but now in ruins, is in its arrangement related to the Byzantine style.

The Architecture of Asia Minor and Syria is nearly allied to that of Egypt; yet in both these countries the many existing Byzantine models, and in later times the Occidental element brought in by the Crusades, made themselves felt. In the eleventh century the Seljuks had extended their sway over a part of Armenia and Asia Minor, and had erected there a great number of edifices. The most important of these are at Iconium (Konieh), the seat of the sultan. The castle itself, now only a ruin, strongly recalls the castles built at that period in more western lands. The great hall has a ceiling rich with color and is vaulted in that peculiar Oriental manner which has been compared to stalactites or honeycomb, to which it has, in fact, some similarity of appearance; yet the principle of its construction is better understood by considering it as composed of small projecting bracket-formed pendentives placed over one another. In recent times this hall has been demolished. Near the great mosque are two school-buildings, one of which has an interesting marble portal.

Mosques.—In Cæsarea there is a great mosque the whole of the nearly quadrangular surface of which is vaulted with small cupolas borne upon piers which are united by pointed arches. In Erzeroum there is a hospital similar to a church with galleries over the side-aisles, except that an open court takes the place of the nave. At the end is the dodecagonal tomb of the founder, which recalls the choir of a Christian church and is covered with a pyramidal roof similar in shape to the domes of the Christian churches of Armenia. After the overthrow of the Seljukian kingdom of Iconium by the Mongols the empire of the Osmanli was founded in Asia, and Broussa became its capital.

The Green Mosque at Nicæa.—The works of Amurath I. (1360–1389) are almost Byzantine. The Green Mosque at Nicæa (1373–1378) has in its centre, instead of the open court, a square domed hall, adjoining which are a smaller hall and a portico. Simple pointed arches of alternate light and dark stone, and walls of smooth ashlar showing the Oriental patterns only in the frieze, characterize this building.

A mosque built by Amurath at Chekirgeh, near Broussa, is in plan and elevation a Byzantine church. A cupola covers the central hall, on three sides of which are large alcoves, the largest, on the east side, opposite the entrance. The latter leads through an open arcade covered with five domes, and through an interior small hall, into the cupola-hall. The treatment of the details bespeaks the Byzantine building, but the pointed arches and other parts betray their Mohammedan origin.

The Great Mosque at Broussa, begun by Amurath and finished by his two immediate successors, is like that of Cæsarea, where the entrance-space is roofed with small cupolas upon piers, except that in the centre, over a fountain, the space of one cupola is left open. A second

mosque, which likewise bears Amurath's name, also shows much of the Byzantine manner.

Mohammedan Art in Spain.—Mohammedan art reached its most brilliant development in Spain, and the structures there erected are also those which most clearly mirror the genius of Islam at its purest. The highest culture seems to have prevailed among the Mohammedans of Spain; only through this did it happen that, notwithstanding external misfortunes, notwithstanding the perpetual advance of the Christians upon the Mohammedan population, Architecture was able to maintain such splendor and grandeur of plan combined with such artistic detail. A new element had been introduced. The governors of the various districts made themselves independent, and, as the ruler of Seville called in the Moors from Africa to aid him against the Christians, the new-comers almost entirely subjugated Arabian Spain; so that it was under Moorish rule that the subsequent development began.

The series of Moorish buildings still left and known to us commences at Toledo. The Gate of the Sun has an aspiring pointed arch between two round towers; above the arch the walls show a decoration of two storeys of interlacing many-cusped horseshoe arches. The present Church of Santa Maria la Blanca, formerly a synagogue, belongs to the twelfth century. It is a five-aisled basilica with polygonal pillars, above which high-pitched horseshoe arches bear walls decorated with a series of blind cinquefoil arches. The capitals as well as the spandrels between the arches and the cornice of the arcade are decorated with elegant ornaments in stucco.

Mosque of Seville.—The African rulers of Spain often held court in Seville during the twelfth century, and hence we have here a series of splendid works. In 1172, at the command of Yusuf Abu Jacob, was founded a mosque remains of which still exist in the later Christian Cathedral. Externally the arrangement is similar to that of the mosque at Cordova—massive flat walls with square buttresses and battlements, pierced with doors, windows, and blind windows. The arch is usually of the cusped pointed form.

The Giralda.—A minaret—the so-called "Giralda"—begun in 1195 is now a bell-tower, but the upper portion was rebuilt in the sixteenth century after an earthquake. The original lower portion is square and has a height of 60 metres (197 feet; Fergusson, 185 feet); an inclined plane in the thick walls forms a convenient ascent to the platform. The lower portion of the walls is plain, but the upper part is divided into panels filled with decorative ornament. There are two series of these panels, three in each. The ancient superstructure, now replaced by work of the sixteenth century, terminated in four gilded bronze spheres.

The Alcazar, or palace, was contemporaneous with the Giralda, but it was afterward essentially rebuilt, and many of these later parts yet exist. The most sumptuous halls were built by Arabian workmen under Christian rule in the reign of Don Pedro the Cruel (1353–1364). To this period

belong the halls shown on Plate 20 (*figs. 2, 4*); these bear the imprint of the later Arabian art as it is displayed in all its splendor at Granada. The Corinthian-like columns and simple horseshoe arches may be remnants of the works of the close of the twelfth century. Through the window of Don Pedro's Hall the Cathedral was visible, and near it the Giralda.

The Alhambra.—Granada, the last residence of the Moorish princes, was the scene of the most elegant and brilliant display which the art of Islam has produced. The Alhambra (signifying in Arabic "the red," from the color of the bricks of which the outer walls are built) is the upper part of the city of Granada, the citadel, where were situated the royal palace and a number of other structures. The exterior shows only the fortifications, a strong wall flanked by thirteen square towers and enclosing an area of about thirty-five acres; towers and walls rise in solemn defiance above rugged cliffs. The palace was begun in the thirteenth century; at the beginning of the fourteenth century Mohammed III. erected from the tribute of conquered Christians a mosque richly decorated with mosaics and sculptures. To Yusuf I. (1333-1354) are ascribed the brilliant decorations of the palace, particularly the exquisite painting of the interior. The principal parts of the structure belong to the reign of Yusuf's son, Mohammed V. (died 1390), whose name is inscribed in various halls. Some parts are even later; Muley Hassan (1445-1453), one of the last kings, added some portions.

Court of the Blessing.—The apartments are grouped chiefly around two courts. In one angle, where the ground-plan (*pl. 21, fig. 6*) shows a structure whose later origin is easily recognizable, is the entrance, which is enclosed by a building of several storeys. A corridor leads from this entrance to a court which is variously known as the Court of the Blessing (*Patio de la Berkàh*), Court of the Pond, or Court of the Myrtles. It is 140 feet long by 74 feet broad; it is paved with white marble, and in its centre is a pond full of goldfish. There are arcades at both ends of the court, while the sides are formed by the walls of two wings of the palace. At the end opposite the entrance is situated the Tower of Comares, the true keep of the palace. A room within the tower, occupying its entire width and height, was the throne-room or audience-hall, now known as the Hall of the Ambassadors (*Sala de los Ambajadores*); this was the grand reception-room, and the throne of the sultan was placed opposite the entrance. The ceiling is admirably diversified with inlaid work of white, blue, and gold in the shape of circles, crowns, and stars, and the walls are covered with varied stucco-work of most delicate patterns. There are nine deeply-recessed windows, three on each façade, which almost form small rooms in the massive wall, and from which is obtained a beautiful view of the city of Granada. A hall in front of the tower is called the "Hall of Blessing." Most of the buildings on the west side, which served various purposes, are now destroyed.

The Court of the Lions (*Patio de los Leones, pl. 20, fig. 3*) is oblong—

116 feet by 66 feet. It is surrounded by arched porticoes, and from the centre of each extremity projects an arched pavilion affording admirable perspectives. Figure 3 (*pl.* 19) shows the vista from the rooms behind the rear arcade, through the entrance, the arcade, and the pavilion, into the court. The square is paved with colored tiles, and the arcades with white marble. In the centre of the court is the celebrated Fountain of the Lions, a magnificent alabaster basin supported by the figures of twelve lions in white marble. From the fountain was thrown up a great volume of water, which fell into the basin and, passing through the lions, flowed from their mouths. Around the eastern side of the court were grouped the living-rooms of the royal family.

The Hall of the Abencerrages (*fig.* 2), in the centre of the southern side, is a square chamber with a fountain and basin; from the hall two lower alcoves are separated by arcades. From pendentives fancifully constructed rises a star-shaped, dome-like tambour through whose sixteen small trellised windows a rich light enters the hall, and above which rises a cupola entirely composed of honeycombed work on small pendentives set over one another even to its summit. On the northern side of the court the Hall of the Two Sisters and its adjoining rooms correspond to the hall just described. A longer but narrower hall on the east side of the court is entitled the "Hall of Justice."

The Generalife (*Jennas-al-Arif*, "Garden of the Architect"), a pleasure-palace near Granada, exhibits an architecture similar to that of the Alhambra. It is separated from the latter by a ravine, and was probably in the first instance an outwork of the fortress, afterward the summer villa of the sultans of Granada. Here dwelling-rooms are grouped around a great court with elegant columns and arches. An Arabian writer praises the garden, with its regal rose-bushes, clear brooks, and cooling zephyrs.

Characteristics of Moorish Architecture.—The character of this architecture, notwithstanding its lavish richness, is not lacking in proportion; for, fanciful and sportive though the forms are, there is yet full harmony in the whole. Solemnity and the impressiveness of a monumental structure are certainly lacking; tectonic ideas are also but slightly expressed. It is a lovely play of forms, but a play only. As a fairy-tale is a play of the fancy calculated to excite for a moment, so also are the rooms of the Alhambra a fairy-land which forbids us to look at reality—cool shadows and vistas of sunlighted spaces; the ripple of fountains, the odor of flowers, and the twittering of birds; light and graceful architectural forms which seem not built, but only dreamed; the elegant play of geometrical ornamentation which, without wearying the spirit, invites to perpetual musing; an ornamentation which captivates the eye and compels it to follow lines that cross and interlace in all directions; a wealth of the gayest and most glowing colors like gold and precious stones magically interwoven and blending as harmoniously as the tones of music.

What can be more attractive than such architecture, which carries back

the thought to the variegated tapestries and carved poles of the outspread tent under which the nomad, when after long wanderings through the waste he has found rest in a blooming oasis, listens to the wizard, and, following the witchery, forgets the real in the contemplation of the treasures spread out before him? The vision of the enchanter, the magic castle of the wizard, is the Alhambra—a place made purposely for oblivion of the world's reality. In this lies its weakness. Though by long gazing fancy may build a magic realm, who would desire to pass his days under the power of its enchantment? Grandeur and earnestness of purpose have their right and their beauty both in life and in Architecture.

Other epochs show that a well-constructed edifice which brings the function of every individual part before the eyes displays a higher, nobler, and more intense beauty—a beauty that, while it is in correspondence with actual human life, gives more enduring satisfaction while it perpetually enchants. Eternal is that enchantment only which charms and overpowers when new, and which after long years may still be shown as such, just as truth itself can be perpetually endured.

Moorish Art in Africa.—Though the African Moors had become the possessors of Mohammedan Spain, it was not Moorish but Arabian architects who constructed their monuments, even until Moorish rule came to an end, in the fifteenth century, and the Moors were completely driven out of Spain. The African rulers took Spanish architects into their native land, where they reared important structures similar to those of Spain, though perhaps not so fanciful. Thus, Jacob-al-Mansúr erected at Morocco at the close of the twelfth century a mosque the minaret of which is said to have been a perfect copy of the Giralda at Seville and to have been the work of the same architect. When, at the commencement of the thirteenth century, the splendor of Morocco had been transferred to Tunis, Andalusian architects also went there and erected important works.

Mohammedan Art in India.—The sway of Islam was not solely extended westward: Mohammedan hosts passed even into India, and at the close of the twelfth century founded an empire which soon surpassed in splendor all others, whether Mohammedan or Christian. Delhi, the capital—the “Envy of the World”—was filled with magnificent structures of all kinds. It reached the climax of its glory under the Taghlaks (1321-1398), the last of whom was overthrown by Timour (Tamerlane), whose Mongolian hordes so thoroughly destroyed the city that it never recovered. The dimensions and the splendor of these structures generally surpassed those of other Mohammedan lands.

Kutab-Minár.—The peculiar conical tower which stands among the ruins of Old Delhi is believed to be the oldest of the Mohammedan monuments of India. This, rising from a star-shaped ground-plan and diminishing to the summit, bears the name of Kutab-Minár (*pl.* 21, *fig.* 1). Near this tower are the remains of an extensive mosque.

We have before endeavored to explain the status of Hindu art at

that period; certain elements derived from it naturally mingled with Mohammedan art. It may even be that older Hindu buildings were altered to suit their new occupants. This mosque has an extensive court enclosing a second smaller court, each surrounded by arcades. Some portions have large capstones upon square pillars, and horizontal lintels upon these. Other parts have pointed arches reverse-curved; yet these likewise are constructed by corbelling in Hindu fashion. Cupolas are also employed. These monuments are attributed to the twelfth or thirteenth century, but this certainly needs careful verification, since, though here, as elsewhere, later additions may have crept in which have altered their character, it does not follow that the original portions are to be referred to so early a date.

This mixture of Mohammedan and Hindu forms occurs also in three mosques at Jaunpur, which city was the seat of an independent dynasty in the first three quarters of the fifteenth century. It is a peculiarity of these mosques that in the middle of the arcaded courts which lie in front of the sanctuary grand portals arise, some crowned with cupolas, others flat-topped; by their massiveness these bring to mind the pylons of the Egyptian temples. This admixture of forms is yet more pleasing in the Mosque of Ahmedabad, the capital of the kingdom of Guzerat, whose rulers were Hindus converted to Islam. These are of the fifteenth century, or later. We can readily believe that these buildings were constructed by Hindu artists and workmen, while Arabian priests or rulers—perhaps some Arabian architects¹—dictated the plan. In other places the Mohammedan element predominated in the fourteenth and fifteenth centuries.

The mosque built at Gour, in Bengal (1358–1367), is an extensive brick building, plain even to crudeness, and roofed with three hundred and eighty-five low cupolas. The mosque at Mandu, erected in the first half of the fifteenth century, has monolithic square pillars of red sandstone connected by pointed arches; on these rest small pointed domes, while upon the west side three similar large domes rest on twelve columns. After the Moguls had established their empire in India, Mohammedan forms came more into the foreground, but they show such a resemblance to Persian works that they must be considered together.

Persian-Mohammedan Art.—Shah Abbas the Great (1597–1629) fixed his residence at Ispahan and decorated it with magnificent buildings which, notwithstanding their vast dimensions, evidence the late period of their erection in the fanciful freedom displayed in the decoration.

The Mydân-i-Shah, or Great Square—the most remarkable feature of the city, and probably the largest square in the world, being 2000 feet long by 700 feet wide—is surrounded by a bazaar formed of two-storey arcades with reverse-curved pointed arches. The corners of the square face the cardinal points, and in the centre of each face some

¹ The Moslem invaders of India were all of Tartar origin; all Arabian influence was, therefore, probably indirect. Religion prescribed the style.—ED.

remarkable building varies the bazaar-arcades. On the north-west is the Ali-Kápi, forming the entrance to the royal palace. It is three storeys high, and from the summit is obtained a splendid view of the city and environs. Opposite the Ali-Kápi, on the south-east side of the square, is the famous Mesjid-i-Shah, or "royal mosque." The central hall of this mosque is square, and has a dome which, like those of India, is pear-shaped. The whole is lined throughout with glazed tiles and is richly decorated with gold and silver ornaments, constituting it the handsomest mosque in all Persia. In the centre of the north-east face of the square is the gate-entrance to the great bazaar usually called the Kaiserieh, and on the south-west side is another mosque which is inferior only to the Mesjid-i-Shah in grandeur and beauty (Rawlinson). Among the other mosques of the city are several of considerable importance.

Chihil-Sutún.—The Mydán-i-Shah adjoins the quarter of the royal palace built by Shah Abbas. This is an oblong space of upward of forty acres, surrounded by walls and containing palaces, pleasure-houses, and other dwellings embosomed amid beautiful gardens. The most sumptuous of the structures is the Royal Palace, called Chihil-Sutún ("the Forty Pillars"). It has an entrance-hall with four rows of six columns, the bases of which are formed of groups of four lions. Columns and ceilings are brilliant with the richest decorations of colors, gold, and silver, between which glisten thousands of small mirrors. The Tomb of Abbas II. is also famous; this is a dodecagon with a dome glowing in gold and azure.

The Medresseh (college) of Shah Sultan Hussain was erected about 1730 in this quarter of the city. The entrance to the college—a lofty portico enriched with fantastically twisted pillars and intermixed with beautiful marble of Tabriz—leads through a pair of brazen gates finished with silver and their whole surface highly carved and embossed with flowers and verses from the Koran. The gates conduct to an elevated semi-dome which opens at once into the court of the college. The right side of this court is occupied by the mosque; the other sides of the square are occupied, one by a lofty and beautiful portico, and the remaining two sides by rooms for the students, twelve on each front, arranged in two storeys. These apartments are little square cells, and seem admirably calculated for study (Morier).

The mosque is still a beautiful building; it is covered with a cupola and faced with two minarets. The plan itself is entirely similar to that of the older buildings, and so is the method of decoration with glazed tiles; the patterns of these exhibit a playful fancy characteristic of the late date. Teheran has been the capital of Persia since 1796. The existing palace of this city imitates that of Ispahan in a very bizarre fashion.

Caravansaries.—Particularly characteristic of Persia are the caravansaries—often of large dimensions—placed at intervals along the high-roads. The description of these, like that of all that is left of ancient Persian art in our day, belongs to Ethnography.

Indian-Mohammedan Architecture.—In strict connection with Persian architecture follows a broader architectural development in India; the flourishing period of this new Indian-Mohammedan style was in the sixteenth and seventeenth centuries. Shah Akbar the Great founded a new capital at Agra, not far from Delhi, and adorned it with majestic edifices. His tomb follows the type of the tumulus and terraced pyramid, or, rather, that of the tope. The stupendous granite structure consists of four storeys diminishing in pyramidal form and surmounted by an empty sarcophagus. Of greater magnificence is Akbar's Palace at Agra, profusely adorned with mosaics and decorations of all kinds.

The Jámá-Masjid.—Shah Jahán, the grandson of Akbar, built New Delhi. Among the forty mosques of this city, the largest, Jámá-Masjid, or the Great Mosque, is the most notable; its façade is shown on Plate 21 (*fig. 5*). The central dome, hidden by the portal in the view, has the same form as the side-domes. The building is surrounded by an additional arcaded wall, which stands on a high substructure; at each angle rises a tall minaret, and in the centre of each of the three sides is an immense gateway to which access is obtained by a broad flight of stairs. It is a magnificent sight to view from afar the *ensemble* of this mosque, with its slender minarets, its towers, and its grand portals. It was constructed 1631–1637 A. D. Various colored materials—red sandstone for the base, marble and brick for the superstructure, gilding on the summits of the domes—add to the charm of the whole.

The Moti-Masjid (Pearl Mosque) at Agra, built of white marble, with a decoration of golden inscriptions on a blue ground, is very celebrated. It is described by Fergusson as follows: "Its dimensions are considerable, being externally 235 feet east and west by 190 feet north and south, and the court-yard 155 feet square. The mass is also considerable, as the whole is raised on a terrace of artificial construction, by the aid of which it stands well out from the surrounding buildings of the fort. Its chief beauty consists in its court-yard, which is wholly of white marble from the pavement to the summit of its domes. In design it somewhat resembles the great Delhi mosque, except that the minarets are omitted and the side gateways are only recesses. The western part, or mosque properly so called, is of white marble inside and out, and, except an inscription from the Kurán inlaid with black marble as a frieze, has no ornament whatever beyond the lines of its own graceful architecture."

The Táj-Mahal.—But before all is the mausoleum built by the emperor Shah Jahán for the remains of his beloved wife, Mumtázá Mahal, and in which he himself is buried. This mausoleum is known as one of the wonders of the world, and it is said that twenty thousand workmen were employed in its erection during a period of twenty-two years. The following is the account given by Fergusson: "The enclosure, including the gardens and outer court, is a parallelogram of 1860 feet by more than 1000 feet. The outer court, surrounded by arcades and adorned by four gateways, forms an oblong occupying in length the whole breadth of the

enclosure by about 450 feet in depth. The principal gateway, measuring 110 feet by 140, leads from the court to the gardens, which, with their marble canals and fountains and cypress trees, are almost as beautiful as the tomb itself. The tomb stands on a raised platform, 18 feet high, faced with white marble, and is exactly 313 feet square. At each corner of this terrace stands a minaret 133 feet in height and of the most exquisite proportions—more beautiful, perhaps, than any other in India. In the centre of the marble platform stands the mausoleum, a square of 186 feet, with the corners cut off to the extent of 33 feet 9 inches. The centre of this is occupied by the principal dome, 58 feet in diameter and 80 feet in height, under which is an enclosure formed by a screen of trellis-work of white marble, a *chef-d'œuvre* of elegance in Indian art. Within this stand the two tombs. These, however, as is usual in Indian sepulchres, are not the true tombs: the bodies rest in a vault level with the surface of the ground, beneath plainer tombstones placed exactly underneath those in the hall above. In each angle of the building is a smaller dome of two storeys in height, 26 feet 8 inches in diameter, and connected by various passages and halls. The light to the central apartment is admitted only through double screens of white marble trellis-work of the most exquisite design, one on the outer and one on the inner face of the walls. In our climate this would produce nearly complete darkness, but in India, and in a building wholly composed of white marble, this was required to temper the glare, which otherwise would have been intolerable. As it is, no words can express the chastened beauty of that central chamber, seen in the soft gloom of the subdued light which reaches it through the distant and half-closed openings that surround it. When used as a pleasure-palace, it must have been the coolest and the loveliest of garden retreats, and now that it is sacred to the dead it is the most graceful and most impressive of the sepulchres of the world. This building is an early example of that system of inlaying with precious stones which became the great characteristic of the style of the Mughuls after the death of Akbar. All the spandrels of the Táj, all the angles and more important architectural details, are heightened by being inlaid with precious stones, such as agates, bloodstones, jaspers, and the like. These are combined in wreaths, scrolls, and frets as exquisite in design as they are beautiful in color, and, relieved by the pure white marble in which they are inlaid, they form the most beautiful and precious style of ornament ever adopted in architecture. It is lavishly bestowed on the tombs themselves and the screens that surround them, but more sparingly introduced on the mosque that forms one wing of the Táj, and on the fountains and surrounding buildings. The judgment, indeed, with which this style of ornament is apportioned to the various parts is almost as remarkable as the ornament itself, and conveys a high idea of the taste and skill of the Indian architects of this age."

To the closing period of Indian-Mohammedan architecture belongs a palace at Madura in which a great hall, represented on Plate 21 (*fig. 2*), is

particularly remarkable. In Bijapur a series of important monuments remain, as the Jámá Mosque, built by Ali Adil Sháh, and the mausoleums of Ibrahim Adil Sháh (1626) and Sultan Mohammed Sháh, the last independent rulers of Bijapur. The last of the architectural monuments to be here considered is the Mausoleum of Hyder Ali, erected at Seringapatam in the second half of the eighteenth century. This is a magnificent domical structure with minarets, but with most degraded details.

Mohammedan Art in Turkey.—In European Turkey art entered on a new phase at the taking of Constantinople (1453). If even at an earlier period Byzantine art had exercised a most important influence upon the plans of mosques, this was still more the case now that the old Agia Sofia had become the chief sanctuary of the Mussulmans and the pattern for all future mosques. Santa Sophia itself was by the addition of minarets and various accessory structures altered to correspond with the new cult.

Mosques.—Plate 22 (*figs. 1, 2*) shows the appearance of two Ottoman mosques; that of Sultan Bajazet belongs to the fifteenth century, that of Suleiman to the sixteenth. Pleasing from its interior decoration of Persian glazed tiles is that built by the Sultana Validé in the seventeenth century, and particularly magnificent is that of Sultan Achmet, which has six minarets.

The palaces of the fifteenth century followed the system of the Alhambra in plan and structure, and there are still in Constantinople some elegant remains of more ancient times; but the bizarre influence of the West made itself felt more and more, and whatever is now built in Constantinople, though in some cases characterized by great richness or imposing dimensions and showing many remnants of ancient Oriental *motifs*, may yet be regarded as a degraded example of the style prevalent in France and Italy in the seventeenth century, and more particularly in the eighteenth. The tower of the Seraskierat (War-Office; *fig. 3*) exhibits this fantastic Occidental style. Every stranger ascends this tower to enjoy the splendid view which it affords.

Fountain of Sultan Achmet.—Constantinople has a number of monumental fountains, of which that of Sultan Achmet (*fig. 4*) is the best known, and was made familiar to the entire West by an exquisite copy in the Vienna Exposition of 1873. It is a charming structure of marble, with a rich decoration of flat ornamental relief, with varied colors and gilding, and with elegant trellises to the angle pavilions. In some cases even here the elements of the Occidental and Oriental styles mingle with beautiful effect.

Mural Decoration.—When we examine the ornamentation exhibited in all these works, as shown on Plates 19–22 and as given in detail on Plate 19 (*figs. 4–11*) and Plate 22 (*figs. 5, 6*), it becomes evident that the endeavor was always to enliven flat surfaces with diaper patterns, and that this was effected by most intricate, and often astonishing, combinations of interlacing lines and bands, into which foliage enters in only a subor-

dinate degree. But in Persia, and to some extent in India, a school of naturalistic plant-like decoration sprang up under the influence of imported Chinese products, and extended also to the ornamentation of European Turkey.

4. RUSSIAN ARCHITECTURE.

The Slavic races are late to appear in history, and among them the Russian alone developed a completely independent, really national style. While some Slavic nationalities followed Byzantine culture until they were crushed under Turkish rule, their style thus becoming but a remnant of the Byzantine, others, as the Bohemians and the Poles, whose confines bordered on Germany, followed the architecture of the Western Christian nations. The style of the Russians even is not of original development, since, like their entire culture, it is linked with Byzantium, and since even at its commencement foreign elements, especially those proceeding from the Western nationalities and from Mohammedan art, entered into its composition. A certain degree of originality, however, has adhered in the course of this development. A glance at Plate 23 shows us a style distinct from all others, yet on the whole closely connected with the later schools of Mohammedan architecture. Let us endeavor to follow the development of this style until we reach the point at which it presented the appearance shown on the Plate.

Russian Civilization begins with the conversion of the race to Christianity. We do not mean that the Russians were entirely uncivilized before their conversion: their status was about the same as had been that of the rest of Europe before the impulses of classical art and of Christianity left only the north-east of Europe unaffected. Kiev was the ancient capital. Though this city was far removed from the centres of the world's activity, it was still near enough to be cognizant of the progress of events. At the time of the conversion of the other Slavic races to Christianity, Vladimir the Great sent to Constantinople for priests to baptize his people, and for himself asked the hand of the Princess Anne, sister of Theophania, the wife of Otho the Great. His request was granted, and he and his people were baptized at Cherson in the year 988. He at once destroyed the image of the national god, Perun, at Kiev, erected there the Church of St. Mary, and founded a series of other ecclesiastical institutions, of which at the time of his death four hundred existed in Kiev alone. Meanwhile, Greek missionaries went everywhere through the land establishing episcopates and erecting churches and convents.

Architecture of the Eleventh Century.—The architecture of the country up to this period had not been monumental, and the new churches were built of wood. With the aid of Greek workmen the sons of Vladimir constructed the cathedrals, some of which still exist. Thus, Mstislav, prince of Tmutorakan, built a Church of Santa Sophia in 1026 at his capital, Chernigov; while the Grand Duke Jaroslav erected the churches of Santa Sophia at Kiev (1037) and Novgorod (1044-1051), as

well as the Abbey Church at Lavra (1054). These structures somewhat closely followed the Byzantine style of architecture, as their names—taken from the original Church of Santa Sophia at Constantinople—indicate. The centre consisted of a cupola surrounded by barrel-vaulted areas, which, as in Santa Sophia at Constantinople, remained without any roof above the vaulting. The church at Novgorod is said to have had originally five cupolas. The cathedral erected by Vladimir in 1152 exhibits a precisely similar arrangement.

Architecture of the Twelfth Century.—During the course of the twelfth century the Russians gradually learned to dispense with the aid of Greek artificers and took church-architecture entirely into their own hands. The great church of the Susdal Convent, which Vsevolod Jurjevich erected in 1176, was constructed by Russian workmen. Nevertheless, the style up to this period may be considered as thoroughly Byzantine.

Architecture of the Thirteenth Century.—At the beginning of the thirteenth century German colonies had already penetrated extensively among the Slavic peoples, and had brought with them their Western Architecture, with which the Russians thus became acquainted, and which must have exercised at least a temporary influence. Many details recall the German structures of that period. The bedchamber of the Grand Duke Andreï in the Convent of Bogoliubov, not far from Vladimir, is entirely Romanesque in style.

Conquest of the Mongols.—In 1237, Russia fell a prey to the Mongols, who, however, remained contented with the suzerainty of the country, but who, through the frequent visits of the Russian grand dukes and barons to the court of the Great Khan, must have exercised an indirect influence. Kiev ceased to be the capital, and after Vladimir had enjoyed this honor for a short time Moscow became in 1328 the seat of the grand dukes, as well as of the archbishop or metropolitan. The city, built entirely of wood, suffered repeatedly from conflagrations.

Architecture of the Fifteenth Century.—Up to the close of the fifteenth century there were in all Russia no stone structures except the churches: houses and palaces—even the walls of various cities—were of wood. Bishop Euphemius of Novgorod is said to have been the first who erected a palace of stone (1433); it was constructed by German architects. The Grand Duke Ivan III. summoned architects, masons, quarrymen, smiths, goldsmiths, and bell-founders from the West. He married (1472) a princess of the exiled Byzantine family of the Palæologi; she had been educated in Italy, and brought Western ideas to her new home. In 1494 the metropolitan Jonas erected a stone palace.

Church of the Assumption.—When Ivan III., employing Russian workmen, had nearly completed the stone church of the Assumption of St. Mary upon the Kremlin, in Moscow, it entirely collapsed, and he despatched an embassy to the Doge of Venice for an architect, who was deputed to him in the person of Ridolfo Fioravanti of Bologna. But when this artist, after an honorable reception, entered upon his duties

(1475), he was commanded to keep strictly to the style of the country, and especially to take the Cathedral of Vladimir for his model. In 1479 the still-existing structure was completed. The walls have outside buttresses united by arches, four on each side and three at each end; these arches correspond to barrel-vaults which are without any outer roof-covering. In the centre rises a dome, and four similar domes stand at the four angles, all upon lofty tambours. These cupolas, like those of the Persians and Hindus, are bulb-shaped. There are three apses on the eastern side. Small blind arcades on colonnettes with cuboidal capitals and rings of mouldings round the shafts, which rest on consoles, are reminiscences of the Romanesque of the West, while the Renaissance is denoted in the Ionic pilaster-caps. The Church of the Archangel Michael was the work of the same architect, and has exactly the same characteristics.

Architecture of the Sixteenth Century.—If the aspect of the churches of the fifteenth century is decidedly Oriental, that of the churches of the sixteenth century is much more so, on account of their greater elaboration. Though the architects were chiefly foreigners, the pure forms of the Renaissance are nowhere employed, and can be recognized only with difficulty among the completely fanciful, and for the most part barbaric, workmanship surrounding them. Next to the two churches in the Kremlin comes that of the Annunciation, a work of the Italian architect Aloisio. In this the exterior of the barrel-vaults takes the form of the pointed arch, and instead of five cupolas there are nine.

The Cathedral Vassili Blashennoi (St. Basil) was built in 1554 by Ivan the Terrible. This consists of eighteen smaller shrines united, arranged in two differently-designed storeys, and provided with the greatest variety of dome-covered towers (*pl. 23, fig. 3*). The form of the domes, which curve out far beyond their tambours and bear immense crosses, the peculiar decoration of the tower-like tambours with round and pointed arched pediments, as well as the filling in of the few flat surfaces, are extraordinarily characteristic. A number of details recall the Italian style, yet the composition as a whole is thoroughly original and produces a decidedly Oriental impression. A miniature imitation of this structure is the Church of the Beheading of St. John the Baptist at Jakovo, near Moscow, in which five octangular chapels are symmetrically arranged into a square plan and four lower cupolas are dominated by a large central structure.

Architecture of the Seventeenth Century.—The churches erected in the seventeenth century have less fanciful shapes, but the details have become still more bizarre; Figures 1, 2, and 4 show very characteristic examples. Even palaces obtained a fantastic expression, chiefly through capricious and improper use of Renaissance forms, which in palace- as in church-construction developed into an independent national style (*fig. 5*). At the end of the sixteenth century, in the time of Peter the Great, when the Western style itself became fantastic by its degradation into the *baroque* style, Russia came into closer relations with the Occident, and the old forms became antiquated and survived only in remoter districts. At

the present day the attempt is being made to bring them again into general use as a national element. Even outside of Russia, wherever Russian princesses live or colonies of rich Russians are settled we see national Russian churches which, with their gilded bulb-shaped cupolas, look strange enough amid their surroundings, yet which preserve in their details more of the antique classic forms than their prototypes in Russia.

IV. ROMANESQUE ARCHITECTURE.

The ancient classic culture was in the days of the Carolingians revived for the last time before its final extinction by the Gothic races, who were now spread over Western Europe, and who overwhelmed with destruction all those external conditions under which alone a great civilization can flourish. The world lapsed again into barbarism, with all its attendant passions and miseries. Accompanying these evils, however, was an intense longing for better things. An Ideal began to form—the establishment of lasting peace throughout the world and the attainment of virtue by each individual. The possessors of this Ideal were not the inhabitants of some special country, nor did it arise where external conditions were so decisive or where the reactive influence of the older races which the Germans had overthrown had been so potent that almost a new people had developed. The possessors of this Ideal were all that family of Western Christian races under Teutonic dominion, even as these races were themselves the seat of the evil.

Diverse as was the nature of all the peoples who were subject to the Germanic tribes, and who gradually again forced themselves into prominence, yet the bond of the Church and the still widely-prevalent impress of the ancient autocratic rule of the emperors (whose last great representative, Charlemagne, was fresh in the memory of all) had so much in common with the status these emperors had established, and the supremacy of the Teutons was everywhere so complete, that all minor differences vanished. Though the unity of the empire was gone, though everywhere the leaders founded small independent kingdoms whose existence each neighbor menaced that he might aggrandize his own, yet all were vividly impressed with the idea that the empire had been a useful institution, which had promoted that peace after which mankind yearned amidst battle and rapine.

Church and State.—That great Ideal contemplated two authorities—an inner, spiritual, and an outer, material, power—which should rule the world in common. The Church was the first of these; its office was to civilize, to teach, to cultivate the arts of peace, to soften manners, to reconcile men to God, to prepare all for another life, and to organize the dispensation of the sacraments. To protect and sustain the Church was the office of the temporal power, to take the sword whenever necessary for the maintenance of right or the overthrow of wrong, and to arrange temporal affairs.

As the pope was the head of the Church, so should the emperor be the

source of temporal authority; all kings should derive their power from him and delegate that power to their vassals, just as bishops and priests in their various grades receive their missions from the pope. The vassal's duty was that of fealty and obedience; so that the whole of society, from its highest ranks to its lowest, should be made up of a series of dependent relations the basis of which was reciprocal loyalty, to the end that the highest should be as little independent as the lowest. The Church and the temporal power—pope and emperor—were to be related like sun and moon.

But this was only an Ideal—an Ideal which for a long period found not even a definite expression, and was felt and perceived rather than systematically established; an Ideal which in the course of time varied in particular features, but which through self-interest, ambition, and other human passions, was cast aside as often as it became inconvenient, and which no authority was sufficiently powerful constantly to sustain.

Since Teutonic races ruled the Western World, it was but natural that Germany itself should take the lead, and though it was also the representative of the dominant world-idea, though it was recognized as the highest political power in Europe, it could not entirely acquire temporal rule, it could not unify the states of Europe into a complete system such as that which the Church had developed. The latter existed as a dominant and unchangeable unity notwithstanding it was assailed by the inconsiderate maintenance of individual interests in opposition to the system. These individual interests, in fact, prevented the state from developing into a European unity. But the Ideal had been best maintained in Germany. It is true that the defencelessness of small dominions had made itself felt here more than elsewhere. Within the empire smouldered civil war; foreign enemies overran the boundaries; the Slavs swept in, and the tenth century had not far progressed before the Magyars threw themselves in countless swarms over Germany and spread over the duchies of Franconia, Bavaria, Swabia, Lorraine, and Saxony.

A. GERMAN ROMANESQUE OF THE TENTH CENTURY.

In the year 919, Henry I. was elected king of Germany. When the Magyars again made their appearance, in 924, he procured a nine years' peace by payment of tribute. He had need of this rest to reinstate the ruined frontier fortresses erected by the Carolingians and to fortify his castles so that they might become places of refuge. In Saxony and Thuringia fortified towns sprang up, as Quedlinburg, Merseburg, Goslar, Brunswick, Nordhausen, Soest, Schleswig, etc. At his residence, Quedlinburg, Henry built the Church of St. Wipertus and the Convent of St. Servatius, and in 930 he constructed a fortress at Merseburg, and also the stone Church of St. John the Baptist. His palace at Merseburg is described as a two-storeyed stone building, in the upper banqueting-hall of which the king's victory over the Magyars (933) was commemorated by mural paintings. The nucleus of Goslar was the protecting fortress of

the present day the attempt is being made to bring them again into general use as a national element. Even outside of Russia, wherever Russian princesses live or colonies of rich Russians are settled we see national Russian churches which, with their gilded bulb-shaped cupolas, look strange enough amid their surroundings, yet which preserve in their details more of the antique classic forms than their prototypes in Russia.

IV. ROMANESQUE ARCHITECTURE.

The ancient classic culture was in the days of the Carolingians revived for the last time before its final extinction by the Gothic races, who were now spread over Western Europe, and who overwhelmed with destruction all those external conditions under which alone a great civilization can flourish. The world lapsed again into barbarism, with all its attendant passions and miseries. Accompanying these evils, however, was an intense longing for better things. An Ideal began to form—the establishment of lasting peace throughout the world and the attainment of virtue by each individual. The possessors of this Ideal were not the inhabitants of some special country, nor did it arise where external conditions were so decisive or where the reactive influence of the older races which the Germans had overthrown had been so potent that almost a new people had developed. The possessors of this Ideal were all that family of Western Christian races under Teutonic dominion, even as these races were themselves the seat of the evil.

Diverse as was the nature of all the peoples who were subject to the Germanic tribes, and who gradually again forced themselves into prominence, yet the bond of the Church and the still widely-prevalent impress of the ancient autocratic rule of the emperors (whose last great representative, Charlemagne, was fresh in the memory of all) had so much in common with the status these emperors had established, and the supremacy of the Teutons was everywhere so complete, that all minor differences vanished. Though the unity of the empire was gone, though everywhere the leaders founded small independent kingdoms whose existence each neighbor menaced that he might aggrandize his own, yet all were vividly impressed with the idea that the empire had been a useful institution, which had promoted that peace after which mankind yearned amidst battle and rapine.

Church and State.—That great Ideal contemplated two authorities—an inner, spiritual, and an outer, material, power—which should rule the world in common. The Church was the first of these; its office was to civilize, to teach, to cultivate the arts of peace, to soften manners, to reconcile men to God, to prepare all for another life, and to organize the dispensation of the sacraments. To protect and sustain the Church was the office of the temporal power, to take the sword whenever necessary for the maintenance of right or the overthrow of wrong, and to arrange temporal affairs.

As the pope was the head of the Church, so should the emperor be the

source of temporal authority; all kings should derive their power from him and delegate that power to their vassals, just as bishops and priests in their various grades receive their missions from the pope. The vassal's duty was that of fealty and obedience; so that the whole of society, from its highest ranks to its lowest, should be made up of a series of dependent relations the basis of which was reciprocal loyalty, to the end that the highest should be as little independent as the lowest. The Church and the temporal power—pope and emperor—were to be related like sun and moon.

But this was only an Ideal—an Ideal which for a long period found not even a definite expression, and was felt and perceived rather than systematically established; an Ideal which in the course of time varied in particular features, but which through self-interest, ambition, and other human passions, was cast aside as often as it became inconvenient, and which no authority was sufficiently powerful constantly to sustain.

Since Teutonic races ruled the Western World, it was but natural that Germany itself should take the lead, and though it was also the representative of the dominant world-idea, though it was recognized as the highest political power in Europe, it could not entirely acquire temporal rule, it could not unify the states of Europe into a complete system such as that which the Church had developed. The latter existed as a dominant and unchangeable unity notwithstanding it was assailed by the inconsiderate maintenance of individual interests in opposition to the system. These individual interests, in fact, prevented the state from developing into a European unity. But the Ideal had been best maintained in Germany. It is true that the defencelessness of small dominions had made itself felt here more than elsewhere. Within the empire smouldered civil war; foreign enemies overran the boundaries; the Slavs swept in, and the tenth century had not far progressed before the Magyars threw themselves in countless swarms over Germany and spread over the duchies of Franconia, Bavaria, Swabia, Lorraine, and Saxony.

A. GERMAN ROMANESQUE OF THE TENTH CENTURY.

In the year 919, Henry I. was elected king of Germany. When the Magyars again made their appearance, in 924, he procured a nine years' peace by payment of tribute. He had need of this rest to reinstate the ruined frontier fortresses erected by the Carolingians and to fortify his castles so that they might become places of refuge. In Saxony and Thuringia fortified towns sprang up, as Quedlinburg, Merseburg, Goslar, Brunswick, Nordhausen, Soest, Schleswig, etc. At his residence, Quedlinburg, Henry built the Church of St. Wipertus and the Convent of St. Servatius, and in 930 he constructed a fortress at Merseburg, and also the stone Church of St. John the Baptist. His palace at Merseburg is described as a two-storeyed stone building, in the upper banqueting-hall of which the king's victory over the Magyars (933) was commemorated by mural paintings. The nucleus of Goslar was the protecting fortress of

the Georgsberg. Not only the cities, but also the convents, were fortified, both for their own safety and for the security of the country in general.

Works of Otho the Great in Saxony.—Otho the Great (923–973) re-established the empire and conquered Italy. A new epoch dawned on Germany; the chroniclers of the time speak of it as the return of the ancient Golden Age. Bishoprics and monasteries became centres of art and knowledge; building was extensively carried on, especially in Saxon lands. Near the St. Wipertus Church in Quedlinburg a monastery was founded, and for this purpose a new building was doubtless undertaken, the crypt of which still remains. The Convent of Fulda was rebuilt, with the help of Otho, by Abbot Hadamar. The church was a three-aisled basilica with two choirs, beneath which were crypts; the walls of the nave were borne by twenty columns. It was dedicated in 948. Abbot Wehrinhar built in 970 a chapel dedicated to St. John the Baptist, and united to it a double colonnade, which surrounded a rectangular court called "Paradise." The eastern part collapsed in 1120, and of this, as of the later constructions of the Middle Ages, there is no trace remaining.

In Magdeburg, Otho founded a Benedictine monastery, in the church of which his wife, Editha (died 946), was buried. It is said that on the site of the church there were laid in 963 the foundations of the cathedral in which in 968 the first archbishop was consecrated. Like his predecessors, Otho for this purpose had sent marble columns from Italy; though the structure was devastated by fire in 1207, these columns, with their capitals, are still to be seen in the present structure. When the cathedral was founded on the site of the St. Maurice Monastery, the monks were transferred by Otho to the Riddagsberg, near Magdeburg; here was erected the monastery of Bergen, dedicated to St. John the Baptist, which became so celebrated in after-years. The original structure was destroyed by fire as early as 1017. In Otho's reign there was built in a suburb of Magdeburg a church of red wood which was burned in 1013.

We must not forget that in general most of the churches of that age, as well as the cities in which they were built, were of wood. The Archbishop Adalag of Hamburg, who founded the bishoprics of Sleswick, Ripe, and Aarhus in 908, built here, as elsewhere in his ecclesiastical jurisdiction, churches of wood only.

In Otho's reign a number of other buildings were erected in Saxony by his barons. In the year 930 the Convent of the Virgin at Schil-desche, north of Bielefeld, was established, and its church was built by masons and stonecutters brought from France. The canonical establishment of Walbeck, founded in 941 and finished in 906, was a stately structure with four churches; in 1011 it fell a prey to the flames.

The Cathedral of Minden was built in 952. The nunnery of Hillersleben on the Ohre (in the Altmark), erected in 958, was after its destruction, in the year 1000, converted into a monastery. St. Gero, margrave of

Lausitz and Nordmark, founded the monastery of Gernrode in 960. In 961, Bishop Bernhard of Halberstadt instituted the convent of Hadmersleben; in 965, Margrave Rikdag of Meissen, that of Gerbstatt; in the same year the monastery on the Kalkberg, near Lüneburg, was erected; and in 967-993 the cathedral at Münster was built. The bishop's church at Zeitz, where Otho founded an episcopal see, was finished in 974.

Architecture on the Rhine.—Not only in Saxony, but also on the banks of the Rhine, there was much architectural activity in Otho's reign. St. Conrad, bishop of Constance (935-976), enlarged the cathedral there, and built a circular Church of the Holy Sepulchre, besides the three churches of St. Lawrence, St. John, and St. Paul. In 932, at Treves, the new building of the Church of the Maximin Convent was dedicated. At Mayence the collegiate Institute of St. Peter was built in 944. About 948, Wulfried, archbishop of Cologne, erected the Church of St. Severin in that city.

Archbishop Bruno of Cologne worked on the churches of St. Cæcilia and Great St. Martin and founded the monastery of St. Pantaleon, together with a hospital for the poor. At his death, in 965, the church of this convent was so far advanced that he found a final resting-place there, notwithstanding it was not consecrated till fifteen years later. Bruno also erected the institution of St. Patroclus at Soest. In the cathedral, which was rebuilt at a later time, there can still be seen in a small vestibule a rich Corinthian marble capital, and in another place a pilaster capital serving as a base, both antique, and probably brought from Italy at this period.

In 965 the brother of Otho the Great, Bruno, who was made duke of Lorraine by the former, began the Church of St. Vincent at Soignies. Everaclus, bishop of Liège, rebuilt in that city the churches which had been destroyed in 954—namely, St. Martin's and St. Paul's in 963, and St. Lawrence in 969. The newly-built church and convent of Gerresheim, near Düsseldorf, was consecrated in 970, and in 974 the Convent of Gladbach, both having been destroyed by the Magyars in 954. Bishop Erchenbald, who became bishop of Strasburg in 965, is said to have dedicated thirty-two churches and ninety chapels, among which Altorf (966) and Maurmünster (972) are enumerated.

The western nuns' choir of the Abbey of Essen, which still exists and forms part of a new building begun in 947, belongs to the period of Otho's reign; in the chief features of its plan it is a copy of the octagon church at Aix-la-Chapelle, and shows in its details the progress of the tenth century. The features most important both here and in the crypt of Quedlinburg are the imitation and employment of antique columns; beyond these the details indicate a wider departure from the antique forms than do those of the Carolingian period. Of Byzantine forms scarcely any trace appears here.

We cannot here give full details concerning the architectural activity at the close of the tenth and during the earlier years of the eleventh cen-

tury; a notice of the principal structures will suffice. The activity which prevailed during the reign of Otho the Great did not cease with his death, which occurred at Memleben in 973, but was continued by his son Otho II., who first honored the locality where his father was buried by erecting a monastery in Memleben in 975. At Gandersheim, after the destruction of the older building by fire, in 973, a new one was commenced, which was completed in 1006. At Halberstadt the consecration of the new cathedral took place in 991 with great pomp.

The St. Servatius Institute at Quedlinburg enjoyed great prosperity; its church became too small, and was enlarged by Otho's daughter Mathilde. In 997 this structure was consecrated, and a newer building was dedicated in 1021.

In 978, Archbishop Willigis demolished the old cathedral at Mayence, and in the space of thirty years constructed a new one of stone, which was dedicated in 1009, but was burnt on the day of its dedication; about 990 he also erected, of wood, the Church of St. Stephen. In the year 983 were laid the foundations of the conventual church at Petershausen, near Constance. Bishop Notker of Liège was famed for his love of building; in 978 he commenced to rebuild the cathedral, which, together with the episcopal palace and the convent, was completed in thirty-seven years, seven years after the death of the bishop. In 996, Bishop Burchard demolished the cathedral at Worms and began a new one, which was dedicated in 1016.

Architecture of Southern Germany.—Great activity prevailed also on the Danube and in Bavaria. Bishop Wolfgang of Ratisbon consecrated the west crypt of St. Emmeram in 980; he established the nunnery of Mittelmünster in 982 and built the episcopal palace. Large structures were erected at Tegernsee under Abbot Cozbert (982–1001), and a tower was added to the Cathedral of Freising by Bishop Abraham in 992. The Cathedral of Augsburg, destroyed in 944, was rebuilt by Bishop Luithold fifty years later.

Everywhere prevailed activity, which was principally directed to monumental buildings; and the fact that structures yet unaffected were torn down to make way for larger and richer ones bears witness to essential progress.

That the country and its entire culture made such important progress affords proof that we are correct in estimating these works of Otho's time as the commencement of a new period, and not as the close of an old one. In fact, the information which has come down to us respecting the structures of Otho I. and his immediate successors teaches us that many new elements were making themselves felt; so that the groundwork had been laid upon which the massive architectural development in Germany during the next two centuries was based. It is true that the buildings of Otho's time were not large, but the arrangement of church-structure was fixed for future time—a basilica with lower side-aisles, the arcades of which were borne on columns; two choirs, an eastern and a western; the crypts

beneath, and a bell-tower, which in an earlier period stood isolated from the basilica, but was henceforward usually made a part of the church itself.

B. GERMAN ROMANESQUE OF THE ELEVENTH CENTURY.

The end of the world was expected in the year 1000; yet, as we can see from the great architectural undertakings commenced just before, enlightened men were not affected by this fear. Yet the superstition of the age had induced the general belief that things could not so continue—that the wicked world for whose deep-seated passions no way to anything better seemed possible must be destroyed in order that the good might receive the recompense of their virtue and the unregenerate suffer the punishment due to their vices and crimes. This belief gave on the one hand an earnestness of purpose which could but work beneficially, while on the other hand mankind breathed freely again as the dreaded year passed by and the world still went on in its old way without the advent of that millennium which contrite spirits awaited with longing, but which men in general greatly dreaded on account of the overwhelming multitude of their sins. Thus the seed sown in every direction by the events of the tenth century grew and developed with great vigor.

Development of Architecture at this Period.—Soon there arose those cathedrals, still majestic, which from the solemnity and grandeur of their aspect are the embodied ideal of their age—the ideal of an age which would have laid the foundations for a golden era had not evil passions hindered its operation, and had not egotism been as powerful in the year 1000 as it had been before. The most magnificent development was upon the Rhine, while in another direction the ancient heritage of the Saxon emperors continued the activity of the tenth century, and wonderful energy was developed upon the Danube and in the regions adjacent to it. A striving after the monumental character distinguished these districts, and wherever wooden churches still existed they were replaced by stone structures of ever-increasing magnificence.

New Elements of Construction.—As a new element in church-construction, introduced at this period, may be mentioned the employment of piers as supports for the walls of the centre aisle: this new feature was the more widely accepted by reason of the fact that the great monolithic columns such as Rome had found ready at hand for the older basilicas could not be so easily procured. Already in the Syrian edifices of the sixth century we have seen that similar requirements produced similar results. (Comp. *pl.* 13, *fig.* 4.) Piers somewhat more massive, indeed, than the columns could be constructed out of horizontal courses of smaller stones, and yet afford greater stability because of their larger area; so that even where columns were still employed they were regularly alternated with piers.

Thus the Church of Gernrode, of which we have made mention (p. 149), and the construction of which may have continued from the tenth into

the eleventh century, has rectangular piers in its arcades and comparatively slender columns in regular alternation (*pl.* 24, *fig.* 1). Above these arcades are galleries arranged in such a manner that the piers below correspond to the piers above, while the two arches below correspond to six smaller arches which rest on five small columns; it is thus clear that the piers were intended as points of support. The *Liebfrauenkirche* (Church of Our Lady) at Halberstadt, which was commenced in the last years of the tenth century, has quadrangular piers.

Architecture of North-west Germany: Church of St. Michael.—In the first years of the eleventh century there were in North-western Germany two bishops who exercised considerable influence through their constructions: these were St. Bernward of Hildesheim (993–1022) and Meinwerk of Paderborn (1009–1036). The former erected the great Church of St. Michael at Hildesheim, which, though in great part rebuilt in later times, still exhibits the principal features of its arrangement. The crypt was dedicated in 1015; the building was essentially completed in 1022. This is one of the most magnificent churches that Germany has produced. In the arcades of the nave each pier alternates with two columns, some of which are preserved as in Bernward's time. The capitals have entirely departed from the traditional antique form; the shape is a slightly-depressed cube which is set upon the round columns and has its lower corners so rounded off that only semicircular shield-shaped portions of the perpendicular surfaces remain. This kind of capital has since been named a block capital. The capital itself has no abacus, yet the antique architrave, a fragment of which was in some earlier buildings placed upon connected columns (Baths of Caracalla, at St. Costanza in Rome, edifices at Ravenna and Parenzo, etc.), still survives in a block of lesser height somewhat narrower than the capital upon which it stands and separated from the arch-springing by a band corresponding to the cornice of the ancient architrave. The alternation of yellowish white with red stones in these portions, as is especially mentioned in St. Bernward's biography, was adopted so that a bright mosaic-like adornment might be imparted to his buildings.

Bishop Meinwerk had scarcely taken possession of his see before he commenced the rebuilding of the cathedral at Paderborn, which had been destroyed by fire in the year 1000. His predecessor had already begun its restoration, but Meinwerk did not consider the work sufficiently magnificent, and therefore demolished it. The new cathedral was completed in 1015. It is related that Greek workmen built the Chapel of St. Bartholomew. This structure yet remains, but shows no tendency toward Byzantine forms; so that only the larger experience of Greek artisans—who were doubtless brought from lower Italy, but who worked under the direction of Western architects—here lent aid to the Germans. The capitals of this chapel show traces of the Corinthian style, but without the abacus. Here also a square impost lies upon the capital, with a bold cornice from which the arches spring.

Great as was the architectural energy of that period, little remains of the edifices then reared, and we can only fill out the series of architectural monuments by the aid of descriptions which have come down to us. In North-western Germany we meet with the before-mentioned Bishop Arnulf of Halberstadt as the founder of the monastery of Ilsenburg, to which Otho III. donated (998) the royal castle of that place. The Cathedral of Walbeck was rebuilt after a conflagration in 1011; the walls of the central nave here rest upon plain quadrangular pillars. Bishop Wigwer built the Cathedral of Verden in 1013; in 1014, Archbishop Gero founded St. Mary's Collegiate Institution at Magdeburg; Archbishop Unwan in 1015 built, of wood, a cathedral at Hamburg, in place of the cathedral, also of wood, which had been burned; and at Merseburg, where the seat of a bishopric was again established in 1004, Bishop Thietmar in 1015 began a new cathedral, which was dedicated in 1021 under his successor, Bruno.

In 1016, after the completion of the cathedral, Bishop Meinwerk of Paderborn commenced the Benedictine monastery of Abdinghof. The building of the convent, particularly of the church, was protracted for ten years after the crypt had been consecrated three years; the edifice, when almost completed, fell in, and could not be consecrated until 1031. In the years 1033-1036 the same bishop built in the east of the city the Church of Bustorf, the design of which he had taken from the Church of the Holy Sepulchre at Jerusalem. At this date edifices were also erected at Korvei.

Bishop Burkhard I. of Halberstadt (1036-1059) evinced great architectural zeal, building twenty-four establishments in his diocese, of which that on Mount Huy attained special importance from its convent. The bishop himself took part as a workman in the construction of the chapel, which was completed in the fifth decade of the century. The first stone cathedral in Hamburg was built by Archbishop Bezzelin in 1037, and the still-existing church of the nunnery at Kemnade—a small building with square piers—was consecrated in 1046.

Bernward's successor, Bishop Godehard of Hildesheim, continued the constructive activity of his predecessor, and built (1023-1027) the minster of the Epiphany, south of the cathedral, and also eastward of the city, in the Sulze marsh, a castle with a Chapel of St. Bartholomew and a larger church, dedicated in 1033. West of the city, on the Zierenberg, he also built a castle serving as a summer residence and having a Chapel of St. Maurice. By 1035 he added to the cathedral an entrance-portico, and also a bell-house. As in 1046 a conflagration had overtaken the cathedral at Hildesheim, with its many adjoining buildings, Bishop Azzelin demolished the entire group and commenced a magnificent cathedral. During the construction of this so many accidents occurred that at his death, in 1054, it was deemed impracticable to finish it, and his successor, Hezilo, erected a new and more modest structure, which was dedicated in 1061, and whose nucleus still remains.

Bishop Hezilo erected the collegiate Church of the Moritzburg, the

three aisles of which were borne on arcades supported by columns, and also the collegiate Church of the Holy Cross. Hezilo's architect was the provost Benno, famed as the first architect of his time, who also erected for the emperor Henry III. the Cathedral of Goslar, dedicated in 1050. In its arcades, as in those of St. Michael at Hildesheim, two columns and a quadrangular pier alternated three times.

In 1030 the see of Zeitz was transferred to Naumburg, where the new cathedral was dedicated about 1050. At the same time the collegiate church was built upon the site of the old Cathedral of Zeitz, and the crypt may be a remnant of this building. At the Castle of Goseck, near Naumburg, a convent was founded in 1041. Two years later the crypt of the conventual church was consecrated, and in 1053 the church itself was dedicated to St. Michael; about 1060-1062 a part of the transept was built.

The new Cathedral of Bremen was erected (1044-1069) under Bishop Bezzelin and his successor, Adalbert. The former made the Cathedral of Cologne his model; the latter, that of Beneventum, which he had seen in 1047. Though frequently altered, portions of the original structure still remain. At Paderborn, also, a reconstruction of the cathedral was effected (1058-1068), in place of that which was burned in the former year; new cathedrals were erected at Halberstadt (1060-1071) and at Minden (1062-1072). The church in Abdinghof, at Paderborn, burned in 1058, was rebuilt and dedicated twenty years later. At Werden, in Westphalia, a crypt consecrated in 1059 is still preserved, and the church dedicated in 1064 was renewed early in the twelfth century. At Ilseburg the still-existing church, in which columns and pillars alternate, was dedicated in 1087, and soon afterward the conventual Church of Huyseburg was dedicated, but was removed at the beginning of the twelfth century to make room for a new structure. In 1083 the Church of St. Ulrich at Sangerhausen was founded; in 1085, that of the Convent of Reinhardsbrunn, near Gotha; and in 1089, that of Oldisleben, near Heldrungen, of whose original structures nothing remains. Bishop Benno of Osnabrück (1068-1088) built the Convent of Iburg, in the Tentoburgian Forest, and consecrated the choir in 1070. The nucleus of the cathedral at Soest belongs to the eleventh century, although the exact time of its erection is not definitely known.

Architecture on the Rhine.—The Rhine, which under the rule of the Romans was the seat of a developed culture, owed the progress which art made upon its banks in the eleventh century, not to the influence of the emperor, but principally to the episcopal sees scattered at various points along the left bank, where extensive cities existed in Roman times. Even here the emperors effected much, many of their foundations being spread along the Rhine and its affluents, and they everywhere supported the bishops. But these latter had been established for centuries; they formed an unbroken line of succession, thus exercising on all occasions, even after they had long attained to the dignity of temp

s, that great

influence which the emperors, who but temporarily sojourned in the imperial palaces on the Rhine, exerted only in their hereditary states where they were absolute rulers.

The Cathedral of Mayence was, as we have mentioned (p. 150), demolished by Archbishop Willigis in the tenth century, and was then rebuilt. The second edifice was not finished until the eleventh century, and was burned in 1009, on the day of its dedication. Rebuilding was at once commenced, and the cathedral was consecrated by Archbishop Bardo in 1036. The lower part of the existing building, shown on Plate 24 (*fig. 14*), may belong to this period, with the exception of the western choir, while on the other hand the superstructure of the lower part of the two round towers and of the eastern façade doubtless belongs to this age. The southern portal contains decorative parts that may almost be called antique, such as Corinthian capitals, which are among the most direct later imitations of this antique form of capitals. The largest of its six towers is three hundred feet in height.

The Cathedral of Strasburg was burned in 1002, and the new structure was long delayed; so that, though after the fashion of the times single parts were completed and brought into use, it was not until 1068 that the building was ready for rededication. Greater energy was manifested at Basle, where the new cathedral was dedicated in 1018. The new structure at Worms, though unfinished, was consecrated in 1016; its plan (*fig. 7*) may, however, be ascribed to this period. Single portions were consecrated in 1053 and 1058. The Church of St. Paul at Worms was founded in 1016, but no part of the existing building can be referred to that time. On the other hand, almost the entire structure of the Church of St. Wilibrord at Echternach, which was erected 1017-1031, is still extant. The latter church has alternate pillars and columns so arranged that over the two arches which sweep from the column to the piers on each side of a bay a great relieving-arch is turned from pier to pier. The capitals of the columns are crude imitations of Corinthian; the side-aisles are covered with cross-vaulting, while the nave has a timber roof. Whether the four towers belong to the original structure cannot be ascertained. The Church of the Apostles at Cologne (*pl. 25, fig. 3*) was commenced in 1020, the Abbey-church of Brauweiler was built in 1024-1028, and in 1030 the Abbey-church of Deutz, founded in 1002, was completed.

Emperor Conrad II. laid in one day in 1030 the foundation-stones of three important churches. One of these, the Convent-church of Limburg on the Hardt (*pl. 24, fig. 5*), a basilica with columns, a rectilinear choir, and two apses in the transept, still exhibits completely the original architecture, but has been a ruin for over three hundred and eighty years. The second church was the Cathedral of Speyer, one of the grandest edifices of the Middle Ages, as is proved by what remains of the original structure, notwithstanding many later additions (*pl. 24, fig. 4; pl. 25, fig. 2*); the vaulting of the nave and the system of pillars as they now stand are part of the original building. The third church which the

emperor founded on this day was that of St. John, the baptistery of the Cathedral of Speyer.

In 1035 the ancient Porta Nigra, at Treves (*pl.* 9, *fig.* 11), was converted into a church by the addition of an apse.¹ In 1038 the church at Hersfeld was founded, and the crypt was consecrated in 1040, but the larger upper church was longer delayed. In Hersfeld there is also a pillared basilica with unvaulted nave, choir, and transept; this was the work of the Cistercian monk Poppo von Stablo, who was also the architect of the church at Limburg. In 1043 the Church of St. Severin at Cologne was dedicated, that of Mittelzell on the island of Reichenau in 1048, and in 1049 that of Sta. Maria in Capitulo in Cologne (*pl.* 24, *fig.* 8), the eastern portion of which, with the exception of the upper half of the principal choir, is still extant in its original state. The latter is of the twelfth century; the vaulting of the side-aisles and the piers of the arcades without doubt belong to the eleventh century. The middle aisle had, however, a wooden roof, which was vaulted at a later date (*figs.* 2, 8).

Between 1049 and 1054 the church of the nunnery of Ottmarsheim (*fig.* 6), begun at the beginning of the eleventh century, was consecrated; it is a copy of the minster-church at Aix la-Chapelle. The Cathedral of Constance was begun in 1052, and was dedicated in 1058; it is a columned basilica, the nucleus of which—namely, the arcades of the nave, the arrangement of the transept, and the rectangular choir—is still extant. St. George at Cologne (a columned basilica) was founded in 1059, as was also the Church of Sta. Maria ad Gradus, which was completed in 1065, burned in 1080, rebuilt in 1085, and demolished in 1817.

Under Archbishop Anno of Cologne (1056–1075) buildings were added to St. Ursula, Great St. Martin, St. Cunibert, and St. Pantaleon. To St. Gereon, a primitive round church, the chapel of St. Nicholas and a large choir with a crypt and two square towers were added in 1067; in 1068 the high altar of the crypt was consecrated, and in 1069 that of the choir. Three years earlier the Abbey-church of St. Michael at Siegburg, built under the same archbishop, was dedicated.

Large buildings were at times delayed considerably in their erection through either imperfect construction or accidental demolition; thus the Cathedral of Treves lay in ruins until Poppo (1017–1047) rebuilt it, to do which he used the three yet-standing columns of Constantine's building, erected a pier in place of the fourth column, and enlarged the building considerably toward the west. It was first finished under Udo (died 1077), the second bishop from Poppo. Though the polygonal west choir is yet later and its altar was consecrated in 1120, yet the exterior of the western portion is essentially a work of that date.

The Cathedral of Speyer was also long in building. When the emperor Henry III. was interred by the side of his parents in the still-unfinished church, in 1056, the works were entirely suspended. Between 1061 and 1072 a consecration took place. Then suddenly the structure became insecure,

¹ In 1817 the Porta Nigra was restored to its ancient use by



and the famous Benno, who in the mean while had become bishop of Osnabruck (1068-1088), was called hither to strengthen the foundations, which the Rhine had begun to undermine. In 1097 the emperor Henry IV., and afterward Bishop Otho of Bamberg, undertook the continuation of the cathedral, which the latter soon completed.

The Cathedral of Mayence, dedicated in 1036, was a prey to the flames in 1081; the emperor Henry IV. commenced the rebuilding, yet after his death it resembled a ruin, and it was in the twelfth century re-erected in its present condition as a vaulted structure. Bardo's structure had a flat ceiling; particulars of Henry IV.'s new building have not come down to us; so that it must remain uncertain whether he commenced the vaulting.

Hirschau Convent.—In the diocese of Speyer the Hirschau Convent was founded in the ninth century, and after it had remained uninhabited for half a century was again peopled in the eleventh century. Its church—a small basilica with columns, block capitals, and vaulted side-aisles—was consecrated in 1071. The convent increased so rapidly that a new one was built between 1083 and 1091, and in the latter year its church was consecrated. It is not known whether columns or pillars supported the walls of this church, which is now destroyed, but we know that it had a flat wooden ceiling, which was renewed in the year 1500. St. Severin at Cologne was restored 1089-1099.

Further Development of Architecture: Vaulting.—One of the most important steps in the development of the architecture of the Middle Ages was the cross or groined vaulting of the nave, as in the cathedrals of Speyer and Mayence, and a number of other buildings. Through this the complete monumentality of the building was consummated, and that perfect harmony of the interior obtained which the Byzantine system had reached by the use of cupolas; but it called for greater wall-masses to withstand the lateral thrust exercised by these large vaults. Even in the Christian-Roman period the apses were vaulted; the square spaces of the chancel and of the transepts and the crossing of nave and transepts were next, in the eleventh century, covered with vaults, even in cases where the nave remained unvaulted and only the side-aisles—or not even these—were vaulted.

At Sta. Maria in Capitulo at Cologne there is at the centre of the cross a semicircular dome out of which the arches of the choir, nave, and transepts cut large sections, and similar domes with abscissas are above the separate parts of the transepts and chancel, which are bounded by transverse arches. Cross-vaulting could only be arranged regularly over square spaces; the middle aisle or nave, which had double the width of the side-aisles, must therefore be divided into bays corresponding to two bays of the side-aisles. This demanded an alternate arrangement of the pillars, and this again necessitated a variety of details to bring the springing of the vaulting, its highest point, and the diagonal arches which lay between the transverse vaults, into visible relationship with the supporting ground. It was a similar case to that of the Baths of Diocletian and

other structures of classical Roman times, where the springing of the vaulting was denoted by Corinthian columns and fragments of entablature.

At the Cathedral of Speyer the proportion was quite different. The side-walls of the nave were almost doubled in height; the vaulting of this part of the building could not, therefore, be directly carried on detached pillars, and the method adopted was to attach to the face of the pillars a half-column which ran from the pavement to the springing of the vaulting, and also received the transverse arches. This half-column is a feeble reminiscence of the columns of the antique buildings. On account of continued additions and the numerous restorations which the Cathedral of Speyer underwent from the twelfth to the fifteenth century (a great part of the nave was rebuilt after its destruction by the French in 1689), we can only speak of the general arrangement of this structure; yet we can assert that in the design, which was systematically and harmoniously arranged, there speak out an earnestness and a dignity in which we see attained a new ideal of a church. We see here a reflection of that prominent ideal of the age which thirsted intensely after rest and peace through perpetual meditation. Even the exterior of the structure bespeaks this ideal.

Majestic peace is stamped on this magnificent monument, solemn dignity speaks in the simple membering of the masses, and there is a grand life in the division and concentration of the individual parts, that rise or sink externally according to the shape of the interior. Where the transept crosses the nave a lantern rises aloft, yielding through its windows that rich light which contributes so largely to the wonderful and purely artistic effect of the interior. Towers rise in various places from the masses, not only to contain the bells which summoned the worshippers, but also by their aspiring forms to direct attention heavenward, and to make the mighty cathedral visibly preponderate from afar over the sea of houses and over the towers of the city walls. The structures of the eleventh century, and particularly the Cathedral of Speyer, all reached essentially the same results which those of the twelfth century attained; the advance in the twelfth century was only in detail and an ever-greater variety of combination.

Architecture of Southern Germany.—The provinces of Southern Germany, particularly those which are now united under the name of Bavaria, obtained their impulse from the Rhine and from Saxony. The chief centres of activity here also were the seats of the bishops, which were for the most part in cities founded by the Romans. Ratisbon must first be named, but Würzburg, Augsburg, and Salzburg were scarcely in the rear.

In 1007 the see of Bamberg was created, and the cathedral of that city was the work of Henry II. and his spouse. The Obermünster Church at Ratisbon was consecrated in 1010. The three convents of Neumünster, Haug, and St. Stephen were founded at Würzburg at the beginning of the eleventh century; St. Stephen was built 1013–1018. Henry II., after he

had had the Cathedral of Bamberg dedicated (1012), founded in 1015 the convent on the Michaelsberg, the church of which was consecrated in 1021.

At Eichstätt, Bishop Heribert (1021-1042) began to rebuild the cathedral, which his successor—who at the same time ruled the Church as Pope Victor II.—brought to a conclusion. The Convent of St. Walburg, which he also commenced, was finished in 1042, the year of his death. The construction of the Church of Niederaltaich continued from 1033 to 1038. The church of the Convent of St. Burchard was dedicated in 1042, and a new cathedral begun, the crypt of which was consecrated in 1045.

In 1052, St. Emmeram at Ratisbon was consecrated by Pope Leo IX., who built the inlaid ceiling at his own expense; an important portion of this edifice—the remarkable entrance-portico (*narthex*)—still remains, while almost all the rest of these buildings of the eleventh century have disappeared. The cathedral at Salzburg was not completely rebuilt in the eleventh century, since that of the ninth century still existed; the church on the Nonneberg was, however, rebuilt in 1023, and in 1041 the crypt was dedicated. The Convent of Gurk was established in the diocese of Salzburg, and its church was consecrated in 1042.

The doubled-choired Church of St. Afra was built at Augsburg in 1064, the cathedral was consecrated in 1065, and in 1071 the Chapel of St. Gertrude was erected near it. The Church of St. Jacob at Bamberg was begun in 1073 and finished at the beginning of the twelfth century. The Chapel of St. Stephen in Ratisbon—the so-called Old Cathedral—descends from the eleventh century; St. Jacob's, in the same city, was begun in 1090, but was demolished early in the twelfth century to make room for the present building.

In Austria, which during the eleventh century had first to battle with its eastern neighbors, the churches of the eleventh century were mostly of wood, but Bishop Altmann, who took his seat at Passau in 1046, constructed stone edifices. The most important of his buildings are St. Florian, which was established by Altmann in 1071 and was occupied by the Augustine Canons; the Convent of Göttweih, where Altmann was buried in 1093; and the College of Molk, which was not finished until the beginning of the twelfth century. In 1093 the collegiate Church of St. Paul at Kärnten was consecrated; it was commenced either soon before 1064 or in 1085.

Bohemia, Poland, and Hungary, after they had found a place near the Western Christian races, joined them definitely in the eleventh century and adopted their civilization; and, since they came into connection with the rest of Europe principally through Germany, their architecture was also that of Germany—so far, at least, as the few remaining structures of this age allow us to judge.

C. GERMAN ROMANESQUE OF THE TWELFTH CENTURY.

Rhenish Provinces.—In the twelfth century we find the episcopal sees on the Rhine, especially Cologne and Mayence, at their highest stage of

prosperity. The Rhine had become for Germany the centre of a culture which sent its rays eastward and made its influence felt over all the Teutonic countries. Untiring architectural activity prevailed upon the historic river: everywhere new churches were commenced; even the villages built monumental stone structures with massive towers. Most of the edifices of the eleventh century were rebuilt; even the more important were not enlarged, but the magnificent ground-plans were retained, and newly-planned churches were seldom erected in these dimensions.

The activity of the beginning of the century was a continuation of that of the preceding century, and its results also shared the fate of the works of that century; what remains belongs in part to the second half, and principally to the close, of the century. The Cathedral of Worms was consecrated in 1110; the new church at Sponheim was built in 1101-1123; the collegiate Church of Boppard, in 1102-1124. All three have been replaced by later structures, yet the church at Laach still remains, and may rightly be esteemed the most surpassing ornament of the Rhineland.

Convent-church at Laach.—The convent was founded in 1093; its church was begun about 1110-1112, and was consecrated in 1156. The three-aisled nave has not the double-compartmented bay with square vaulting such as we find at Mayence and Speyer, but the pillars are placed farther apart than in those cathedrals; so that the space between each pair forms a bay the length of which is about two-thirds the width of the nave, and the vaulted compartments are oblong. The windows are larger and the piers are membered, so that each part corresponds to the vaulting resting upon it. And this is not only attractive in itself, but also organically binds every part, from below to the summit of the vaulting. An eastern transept projects far beyond the side-aisles; in the angles between the choir and the transept are two square towers; a large apse terminates the square choir and two small apses project from the eastern side of the transepts. There is a crypt below the much-elevated square chancel and the principal apse. There is a western transept, which occupies only the width of a bay of the nave. Two round towers are attached to the gables, as at Mayence; the centre of the western transept is continued upward into a tower oblong below, but square above, and the western end is closed by an apse without an intermediate square choir. An octangular lantern rises over the intersection of the nave and eastern transept.

The Church of St. Mauritius at Cologne, demolished not many years ago, was built before 1144; that of St. Matthias at Treves, between 1127 and 1148. The sanctuary and transept of the Abbey of Knechtstatten were built between 1133 and 1151, and the latter was covered with three domical vaults. An octangular tower rises at the intersection of nave and transept, but does not form a lantern. The nave appears, from the section of the shafting of the pillars and their slender proportions, to have been completed about the end of the century. The construction of the Church

of Klosterrath (Rolduc) occupied the entire century, but the Chapel of St. Gothard at Mayence was between 1136 and 1138 finished as it stands to-day. A magnificent new cathedral was commenced at Mayence after 1137. In 1136-1139 the Convent and Church of Himmerodt, near Treves, were built, but they were soon replaced by a larger structure. The Church of the Augustines at Mittelheim is a basilica with a wooden ceiling (1131-1140).

A great conflagration in 1149 laid the larger part of Cologne in ashes, but it was at once rebuilt. Most of the churches either fell a prey to the flames or were damaged so that scarcely more than some fragments of walls remained of the earlier period; then were erected those magnificent structures which are the pride of the city. The Church of the Apostles (*pl.* 24, *fig.* 11; *pl.* 25, *fig.* 3), Great St. Martin, the choir of St. Gereon (*pl.* 25, *fig.* 7), etc., were completed more or less quickly. The old cathedral at the same time received a stone vaulting.

The beautiful double church at Schwarzhof, near Bonn, belongs to the years 1143-1148. The eastern portion of St. Gereon at Cologne was dedicated between the years 1151 and 1156. The Church of St. Remigius at Ingelheim was erected in 1154, and the Cistercian church at Eberbach—the original eastern part of which is shown on Plate 24 (*fig.* 9), and is exactly like that of most Cistercian convents—was founded 1150-1156. Archbishop Hilinus of Treves (1152-1169) enlarged his cathedral. In 1159 the Cathedral of Speyer was burned, and larger buildings were deemed necessary. About 1170 two towers were built at Cologne Cathedral; in 1172, Great St. Martin's at Cologne, in 1173 the church at Petershausen, begun eleven years before, in 1170 the new minster at Zurich, and in 1178 the new church at Hillerodt, were consecrated. In 1181 there was another dedication of the Cathedral of Worms, which was at that date, as regards its exterior, in the state in which it exists to-day, with the exception of a few later additions. This cathedral, which has four towers, is represented on Plate 25 (*fig.* 1).

In 1182 the *Liebfrauenkirche* (Church of Our Lady) at Coblenz was founded, in 1185 the Cathedral of Basle was remodelled, in 1196 that of Treves was dedicated anew, and in 1197 that of Mayence. Other Rhenish buildings of the twelfth century are St. Castor at Coblenz, St. Genevieve at Andernach, the choir of the minster at Bonn, the flat-ceiled Church of St. John at Niederlahnstein, etc.

In Southern Germany the architecture of the twelfth century did not find the fruitful soil it met with on the Rhine; it fell behind alike in grandeur of design, in poetical aspiration, in elegance of proportions, and in delicacy of ornament. The structures are a few rich convents or municipal collegiate institutions which were finished as flat-ceiled basilicas, either with pillars or stout, rapidly-tapering columns with cubical capitals between the nave and the aisles.

The most considerable of these buildings are the church at Alpirsbach—really a work of the eleventh century, since it was consecrated

the eleventh century, has rectangular piers in its arcades and comparatively slender columns in regular alternation (*pl.* 24, *fig.* 1). Above these arcades are galleries arranged in such a manner that the piers below correspond to the piers above, while the two arches below correspond to six smaller arches which rest on five small columns; it is thus clear that the piers were intended as points of support. The *Liebfrauenkirche* (Church of Our Lady) at Halberstadt, which was commenced in the last years of the tenth century, has quadrangular piers.

Architecture of North-west Germany: Church of St. Michael.—In the first years of the eleventh century there were in North-western Germany two bishops who exercised considerable influence through their constructions: these were St. Bernward of Hildesheim (993–1022) and Meinwerk of Paderborn (1009–1036). The former erected the great Church of St. Michael at Hildesheim, which, though in great part rebuilt in later times, still exhibits the principal features of its arrangement. The crypt was dedicated in 1015; the building was essentially completed in 1022. This is one of the most magnificent churches that Germany has produced. In the arcades of the nave each pier alternates with two columns, some of which are preserved as in Bernward's time. The capitals have entirely departed from the traditional antique form; the shape is a slightly-depressed cube which is set upon the round columns and has its lower corners so rounded off that only semicircular shield-shaped portions of the perpendicular surfaces remain. This kind of capital has since been named a block capital. The capital itself has no abacus, yet the antique architrave, a fragment of which was in some earlier buildings placed upon connected columns (Baths of Caracalla, at St. Costanza in Rome, edifices at Ravenna and Parenzo, etc.), still survives in a block of lesser height somewhat narrower than the capital upon which it stands and separated from the arch-springing by a band corresponding to the cornice of the ancient architrave. The alternation of yellowish white with red stones in these portions, as is especially mentioned in St. Bernward's biography, was adopted so that a bright mosaic-like adornment might be imparted to his buildings.

Bishop Meinwerk had scarcely taken possession of his see before he commenced the rebuilding of the cathedral at Paderborn, which had been destroyed by fire in the year 1000. His predecessor had already begun its restoration, but Meinwerk did not consider the work sufficiently magnificent, and therefore demolished it. The new cathedral was completed in 1015. It is related that Greek workmen built the Chapel of St. Bartholomew. This structure yet remains, but shows no tendency toward Byzantine forms; so that only the larger experience of Greek artisans—who were doubtless brought from lower Italy, but who worked under the direction of Western architects—here lent aid to the Germans. The capitals of this chapel show traces of the Corinthian style, but without the abacus. Here also a square impost lies upon the capital, with a bold cornice from which the arches spring.

Great as was the architectural energy of that period, little remains of the edifices then reared, and we can only fill out the series of architectural monuments by the aid of descriptions which have come down to us. In North-western Germany we meet with the before-mentioned Bishop Arnulf of Halberstadt as the founder of the monastery of Ilsenburg, to which Otho III. donated (998) the royal castle of that place. The Cathedral of Walbeck was rebuilt after a conflagration in 1011; the walls of the central nave here rest upon plain quadrangular pillars. Bishop Wigwer built the Cathedral of Verden in 1013; in 1014, Archbishop Gero founded St. Mary's Collegiate Institution at Magdeburg; Archbishop Unwan in 1015 built, of wood, a cathedral at Hamburg, in place of the cathedral, also of wood, which had been burned; and at Merseburg, where the seat of a bishopric was again established in 1004, Bishop Thietmar in 1015 began a new cathedral, which was dedicated in 1021 under his successor, Bruno.

In 1016, after the completion of the cathedral, Bishop Meinwerk of Paderborn commenced the Benedictine monastery of Abdinghof. The building of the convent, particularly of the church, was protracted for ten years after the crypt had been consecrated three years; the edifice, when almost completed, fell in, and could not be consecrated until 1031. In the years 1033-1036 the same bishop built in the east of the city the Church of Bustorf, the design of which he had taken from the Church of the Holy Sepulchre at Jerusalem. At this date edifices were also erected at Korvei.

Bishop Burkhard I. of Halberstadt (1036-1059) evinced great architectural zeal, building twenty-four establishments in his diocese, of which that on Mount Huy attained special importance from its convent. The bishop himself took part as a workman in the construction of the chapel, which was completed in the fifth decade of the century. The first stone cathedral in Hamburg was built by Archbishop Bezzelin in 1037, and the still-existing church of the nunnery at Kemnade—a small building with square piers—was consecrated in 1046.

Bernward's successor, Bishop Godehard of Hildesheim, continued the constructive activity of his predecessor, and built (1023-1027) the minster of the Epiphany, south of the cathedral, and also eastward of the city, in the Sulze marsh, a castle with a Chapel of St. Bartholomew and a larger church, dedicated in 1033. West of the city, on the Zierenberg, he also built a castle serving as a summer residence and having a Chapel of St. Maurice. By 1035 he added to the cathedral an entrance-portico, and also a bell-house. As in 1046 a conflagration had overtaken the cathedral at Hildesheim, with its many adjoining buildings, Bishop Azzelin demolished the entire group and commenced a magnificent cathedral. During the construction of this so many accidents occurred that at his death, in 1054, it was deemed impracticable to finish it, and his successor, Hezilo, erected a new and more modest structure, which was dedicated in 1061, and whose nucleus still remains.

Bishop Hezilo erected the collegiate Church of the Moritzburg, the

three aisles of which were borne on arcades supported by columns, and also the collegiate Church of the Holy Cross. Hezilo's architect was the provost Benno, famed as the first architect of his time, who also erected for the emperor Henry III. the Cathedral of Goslar, dedicated in 1050. In its arcades, as in those of St. Michael at Hildesheim, two columns and a quadrangular pier alternated three times.

In 1030 the see of Zeitz was transferred to Naumburg, where the new cathedral was dedicated about 1050. At the same time the collegiate church was built upon the site of the old Cathedral of Zeitz, and the crypt may be a remnant of this building. At the Castle of Goseck, near Naumburg, a convent was founded in 1041. Two years later the crypt of the conventual church was consecrated, and in 1053 the church itself was dedicated to St. Michael; about 1060-1062 a part of the transept was built.

The new Cathedral of Bremen was erected (1044-1069) under Bishop Bezzelin and his successor, Adalbert. The former made the Cathedral of Cologne his model; the latter, that of Beneventum, which he had seen in 1047. Though frequently altered, portions of the original structure still remain. At Paderborn, also, a reconstruction of the cathedral was effected (1058-1068), in place of that which was burned in the former year; new cathedrals were erected at Halberstadt (1060-1071) and at Minden (1062-1072). The church in Abdinghof, at Paderborn, burned in 1058, was rebuilt and dedicated twenty years later. At Werden, in Westphalia, a crypt consecrated in 1059 is still preserved, and the church dedicated in 1064 was renewed early in the twelfth century. At Ilseburg the still-existing church, in which columns and pillars alternate, was dedicated in 1087, and soon afterward the conventual Church of Huyseburg was dedicated, but was removed at the beginning of the twelfth century to make room for a new structure. In 1083 the Church of St. Ulrich at Sangerhausen was founded; in 1085, that of the Convent of Reinhardsbrunn, near Gotha; and in 1089, that of Oldisleben, near Heldrungen, of whose original structures nothing remains. Bishop Benno of Osnabrück (1068-1088) built the Convent of Iburg, in the Teutoburgian Forest, and consecrated the choir in 1070. The nucleus of the cathedral at Soest belongs to the eleventh century, although the exact time of its erection is not definitely known.

Architecture on the Rhine.—The Rhine, which under the rule of the Romans was the seat of a developed culture, owed the progress which art made upon its banks in the eleventh century, not to the influence of the emperor, but principally to the episcopal sees scattered at various points along the left bank, where extensive cities existed in Roman times. Even here the emperors effected much, many of their foundations being spread along the Rhine and its affluents, and they everywhere supported the bishops. But these latter had been established for centuries; they formed an unbroken line of succession, thus exercising on all occasions, even after they had long attained to the dignity of temporal princes, that great

influence which the emperors, who but temporarily sojourned in the imperial palaces on the Rhine, exerted only in their hereditary states where they were absolute rulers.

The Cathedral of Mayence was, as we have mentioned (p. 150), demolished by Archbishop Willigis in the tenth century, and was then rebuilt. The second edifice was not finished until the eleventh century, and was burned in 1009, on the day of its dedication. Rebuilding was at once commenced, and the cathedral was consecrated by Archbishop Bardo in 1036. The lower part of the existing building, shown on Plate 24 (*fig. 14*), may belong to this period, with the exception of the western choir, while on the other hand the superstructure of the lower part of the two round towers and of the eastern façade doubtless belongs to this age. The southern portal contains decorative parts that may almost be called antique, such as Corinthian capitals, which are among the most direct later imitations of this antique form of capitals. The largest of its six towers is three hundred feet in height.

The Cathedral of Strasburg was burned in 1002, and the new structure was long delayed; so that, though after the fashion of the times single parts were completed and brought into use, it was not until 1068 that the building was ready for rededication. Greater energy was manifested at Basle, where the new cathedral was dedicated in 1018. The new structure at Worms, though unfinished, was consecrated in 1016; its plan (*fig. 7*) may, however, be ascribed to this period. Single portions were consecrated in 1053 and 1058. The Church of St. Paul at Worms was founded in 1016, but no part of the existing building can be referred to that time. On the other hand, almost the entire structure of the Church of St. Wilibrord at Echternach, which was erected 1017–1031, is still extant. The latter church has alternate pillars and columns so arranged that over the two arches which sweep from the column to the piers on each side of a bay a great relieving-arch is turned from pier to pier. The capitals of the columns are crude imitations of Corinthian; the side-aisles are covered with cross-vaulting, while the nave has a timber roof. Whether the four towers belong to the original structure cannot be ascertained. The Church of the Apostles at Cologne (*pl. 25, fig. 3*) was commenced in 1020, the Abbey-church of Brauweiler was built in 1024–1028, and in 1030 the Abbey-church of Deutz, founded in 1002, was completed.

Emperor Conrad II. laid in one day in 1030 the foundation-stones of three important churches. One of these, the Convent-church of Limburg on the Hardt (*pl. 24, fig. 5*), a basilica with columns, a rectilinear choir, and two apses in the transept, still exhibits completely the original architecture, but has been a ruin for over three hundred and eighty years. The second church was the Cathedral of Speyer, one of the grandest edifices of the Middle Ages, as is proved by what remains of the original structure, notwithstanding many later additions (*pl. 24, fig. 4; pl. 25, fig. 2*); the vaulting of the nave and the system of pillars as they now stand are part of the original building. The third church which the

emperor founded on this day was that of St. John, the baptistry of the Cathedral of Speyer.

In 1035 the ancient Porta Nigra, at Treves (*pl.* 9, *fig.* 11), was converted into a church by the addition of an apse.¹ In 1038 the church at Hersfeld was founded, and the crypt was consecrated in 1040, but the larger upper church was longer delayed. In Hersfeld there is also a pillared basilica with unvaulted nave, choir, and transept; this was the work of the Cistercian monk Poppo von Stablo, who was also the architect of the church at Limburg. In 1043 the Church of St. Severin at Cologne was dedicated, that of Mittelzell on the island of Reichenau in 1048, and in 1049 that of Sta. Maria in Capitulo in Cologne (*pl.* 24, *fig.* 8), the eastern portion of which, with the exception of the upper half of the principal choir, is still extant in its original state. The latter is of the twelfth century; the vaulting of the side-aisles and the piers of the arcades without doubt belong to the eleventh century. The middle aisle had, however, a wooden roof, which was vaulted at a later date (*figs.* 2, 8).

Between 1049 and 1054 the church of the nunnery of Ottmarsheim (*fig.* 6), begun at the beginning of the eleventh century, was consecrated; it is a copy of the minster-church at Aix la-Chapelle. The Cathedral of Constance was begun in 1052, and was dedicated in 1058; it is a columned basilica, the nucleus of which—namely, the arcades of the nave, the arrangement of the transept, and the rectangular choir—is still extant. St. George at Cologne (a columned basilica) was founded in 1059, as was also the Church of Sta. Maria ad Gradus, which was completed in 1065, burned in 1080, rebuilt in 1085, and demolished in 1817.

Under Archbishop Anno of Cologne (1056–1075) buildings were added to St. Ursula, Great St. Martin, St. Cunibert, and St. Pantaleon. To St. Gereon, a primitive round church, the chapel of St. Nicholas and a large choir with a crypt and two square towers were added in 1067; in 1068 the high altar of the crypt was consecrated, and in 1069 that of the choir. Three years earlier the Abbey-church of St. Michael at Siegburg, built under the same archbishop, was dedicated.

Large buildings were at times delayed considerably in their erection through either imperfect construction or accidental demolition; thus the Cathedral of Treves lay in ruins until Poppo (1017–1047) rebuilt it, to do which he used the three yet-standing columns of Constantine's building, erected a pier in place of the fourth column, and enlarged the building considerably toward the west. It was first finished under Udo (died 1077), the second bishop from Poppo. Though the polygonal west choir is yet later and its altar was consecrated in 1120, yet the exterior of the western portion is essentially a work of that date.

The Cathedral of Speyer was also long in building. When the emperor Henry III. was interred by the side of his parents in the still-unfinished church, in 1056, the works were entirely suspended. Between 1061 and 1072 a consecration took place. Then suddenly the structure became insecure,

¹ In 1817 the Porta Nigra was restored to its ancient use by the Prussian government.—ED.

and the famous Benno, who in the mean while had become bishop of Osna-bruck (1068-1088), was called hither to strengthen the foundations, which the Rhine had begun to undermine. In 1097 the emperor Henry IV., and afterward Bishop Otho of Bamberg, undertook the continuation of the cathedral, which the latter soon completed.

The Cathedral of Mayence, dedicated in 1036, was a prey to the flames in 1081; the emperor Henry IV. commenced the rebuilding, yet after his death it resembled a ruin, and it was in the twelfth century re-erected in its present condition as a vaulted structure. Bardo's structure had a flat ceiling; particulars of Henry IV.'s new building have not come down to us; so that it must remain uncertain whether he commenced the vaulting.

Hirschau Convent.—In the diocese of Speyer the Hirschau Convent was founded in the ninth century, and after it had remained uninhabited for half a century was again peopled in the eleventh century. Its church—a small basilica with columns, block capitals, and vaulted side-aisles—was consecrated in 1071. The convent increased so rapidly that a new one was built between 1083 and 1091, and in the latter year its church was consecrated. It is not known whether columns or pillars supported the walls of this church, which is now destroyed, but we know that it had a flat wooden ceiling, which was renewed in the year 1500. St. Severin at Cologne was restored 1089-1099.

Further Development of Architecture: Vaulting.—One of the most important steps in the development of the architecture of the Middle Ages was the cross or groined vaulting of the nave, as in the cathedrals of Speyer and Mayence, and a number of other buildings. Through this the complete monumentality of the building was consummated, and that perfect harmony of the interior obtained which the Byzantine system had reached by the use of cupolas; but it called for greater wall-masses to withstand the lateral thrust exercised by these large vaults. Even in the Christian-Roman period the apses were vaulted; the square spaces of the chancel and of the transepts and the crossing of nave and transepts were next, in the eleventh century, covered with vaults, even in cases where the nave remained unvaulted and only the side-aisles—or not even these—were vaulted.

At Sta. Maria in Capitulo at Cologne there is at the centre of the cross a semicircular dome out of which the arches of the choir, nave, and transepts cut large sections, and similar domes with abscissas are above the separate parts of the transepts and chancel, which are bounded by transverse arches. Cross-vaulting could only be arranged regularly over square spaces; the middle aisle or nave, which had double the width of the side-aisles, must therefore be divided into bays corresponding to two bays of the side-aisles. This demanded an alternate arrangement of the pillars, and this again necessitated a variety of details to bring the springing of the vaulting, its highest point, and the diagonal arches which lay between the transverse vaults, into visible relationship with the supporting ground. It was a similar case to that of the Baths of Diocletian and

other structures of classical Roman times, where the springing of the vaulting was denoted by Corinthian columns and fragments of entablature.

At the Cathedral of Speyer the proportion was quite different.. The side-walls of the nave were almost doubled in height; the vaulting of this part of the building could not, therefore, be directly carried on detached pillars, and the method adopted was to attach to the face of the pillars a half-column which ran from the pavement to the springing of the vaulting, and also received the transverse arches. This half-column is a feeble reminiscence of the columns of the antique buildings. On account of continued additions and the numerous restorations which the Cathedral of Speyer underwent from the twelfth to the fifteenth century (a great part of the nave was rebuilt after its destruction by the French in 1689), we can only speak of the general arrangement of this structure; yet we can assert that in the design, which was systematically and harmoniously arranged, there speak out an earnestness and a dignity in which we see attained a new ideal of a church. We see here a reflection of that prominent ideal of the age which thirsted intensely after rest and peace through perpetual meditation. Even the exterior of the structure bespeaks this ideal.

Majestic peace is stamped on this magnificent monument, solemn dignity speaks in the simple membering of the masses, and there is a grand life in the division and concentration of the individual parts, that rise or sink externally according to the shape of the interior. Where the transept crosses the nave a lantern rises aloft, yielding through its windows that rich light which contributes so largely to the wonderful and purely artistic effect of the interior. Towers rise in various places from the masses, not only to contain the bells which summoned the worshippers, but also by their aspiring forms to direct attention heavenward, and to make the mighty cathedral visibly preponderate from afar over the sea of houses and over the towers of the city walls. The structures of the eleventh century, and particularly the Cathedral of Speyer, all reached essentially the same results which those of the twelfth century attained; the advance in the twelfth century was only in detail and an ever-greater variety of combination.

Architecture of Southern Germany.—The provinces of Southern Germany, particularly those which are now united under the name of Bavaria, obtained their impulse from the Rhine and from Saxony. The chief centres of activity here also were the seats of the bishops, which were for the most part in cities founded by the Romans. Ratisbon must first be named, but Würzburg, Augsburg, and Salzburg were scarcely in the rear.

In 1007 the see of Bamberg was created, and the cathedral of that city was the work of Henry II. and his spouse. The Obermünster Church at Ratisbon was consecrated in 1010. The three convents of Neumünster, Haug, and St. Stephen were founded at Würzburg at the beginning of the eleventh century; St. Stephen was built 1013–1018. Henry II., after he

had had the Cathedral of Bamberg dedicated (1012), founded in 1015 the convent on the Michaelsberg, the church of which was consecrated in 1021.

At Eichstädt, Bishop Heribert (1021-1042) began to rebuild the cathedral, which his successor—who at the same time ruled the Church as Pope Victor II.—brought to a conclusion. The Convent of St. Walburg, which he also commenced, was finished in 1042, the year of his death. The construction of the Church of Niederaltaich continued from 1033 to 1038. The church of the Convent of St. Burchard was dedicated in 1042, and a new cathedral begun, the crypt of which was consecrated in 1045.

In 1052, St. Emmeram at Ratisbon was consecrated by Pope Leo IX., who built the inlaid ceiling at his own expense; an important portion of this edifice—the remarkable entrance-portico (*narthex*)—still remains, while almost all the rest of these buildings of the eleventh century have disappeared. The cathedral at Salzburg was not completely rebuilt in the eleventh century, since that of the ninth century still existed; the church on the Nonneberg was, however, rebuilt in 1023, and in 1041 the crypt was dedicated. The Convent of Gurk was established in the diocese of Salzburg, and its church was consecrated in 1042.

The doubled-choired Church of St. Afra was built at Augsburg in 1064, the cathedral was consecrated in 1065, and in 1071 the Chapel of St. Gertrude was erected near it. The Church of St. Jacob at Bamberg was begun in 1073 and finished at the beginning of the twelfth century. The Chapel of St. Stephen in Ratisbon—the so-called Old Cathedral—descends from the eleventh century; St. Jacob's, in the same city, was begun in 1090, but was demolished early in the twelfth century to make room for the present building.

In Austria, which during the eleventh century had first to battle with its eastern neighbors, the churches of the eleventh century were mostly of wood, but Bishop Altmann, who took his seat at Passau in 1046, constructed stone edifices. The most important of his buildings are St. Florian, which was established by Altmann in 1071 and was occupied by the Augustine Canons; the Convent of Göttweih, where Altmann was buried in 1093; and the College of Mölk, which was not finished until the beginning of the twelfth century. In 1093 the collegiate Church of St. Paul at Kärnten was consecrated; it was commenced either soon before 1064 or in 1085.

Bohemia, Poland, and Hungary, after they had found a place near the Western Christian races, joined them definitely in the eleventh century and adopted their civilization; and, since they came into connection with the rest of Europe principally through Germany, their architecture was also that of Germany—so far, at least, as the few remaining structures of this age allow us to judge.

C. GERMAN ROMANESQUE OF THE TWELFTH CENTURY.

Rhenish Provinces.—In the twelfth century we find the episcopal sees on the Rhine, especially Cologne and Mayence, at their highest stage of

prosperity. The Rhine had become for Germany the centre of a culture which sent its rays eastward and made its influence felt over all the Teutonic countries. Untiring architectural activity prevailed upon the historic river: everywhere new churches were commenced; even the villages built monumental stone structures with massive towers. Most of the edifices of the eleventh century were rebuilt; even the more important were not enlarged, but the magnificent ground-plans were retained, and newly-planned churches were seldom erected in these dimensions.

The activity of the beginning of the century was a continuation of that of the preceding century, and its results also shared the fate of the works of that century; what remains belongs in part to the second half, and principally to the close, of the century. The Cathedral of Worms was consecrated in 1110; the new church at Sponheim was built in 1101-1123; the collegiate Church of Boppard, in 1102-1124. All three have been replaced by later structures, yet the church at Laach still remains, and may rightly be esteemed the most surpassing ornament of the Rhineland.

Convent-church at Laach.—The convent was founded in 1093; its church was begun about 1110-1112, and was consecrated in 1156. The three-aisled nave has not the double-compartmented bay with square vaulting such as we find at Mayence and Speyer, but the pillars are placed farther apart than in those cathedrals; so that the space between each pair forms a bay the length of which is about two-thirds the width of the nave, and the vaulted compartments are oblong. The windows are larger and the piers are membered, so that each part corresponds to the vaulting resting upon it. And this is not only attractive in itself, but also organically binds every part, from below to the summit of the vaulting. An eastern transept projects far beyond the side-aisles; in the angles between the choir and the transept are two square towers; a large apse terminates the square choir and two small apses project from the eastern side of the transepts. There is a crypt below the much-elevated square chancel and the principal apse. There is a western transept, which occupies only the width of a bay of the nave. Two round towers are attached to the gables, as at Mayence; the centre of the western transept is continued upward into a tower oblong below, but square above, and the western end is closed by an apse without an intermediate square choir. An octangular lantern rises over the intersection of the nave and eastern transept.

The Church of St. Mauritius at Cologne, demolished not many years ago, was built before 1144; that of St. Matthias at Treves, between 1127 and 1148. The sanctuary and transept of the Abbey of Knechtsteden were built between 1133 and 1151, and the latter was covered with three domical vaults. An octangular tower rises at the intersection of nave and transept, but does not form a lantern. The nave appears, from the section of the shafting of the pillars and their slender proportions, to have been completed about the end of the century. The construction of the Church

of Klosterrath (Rolduc) occupied the entire century, but the Chapel of St. Gothard at Mayence was between 1136 and 1138 finished as it stands to-day. A magnificent new cathedral was commenced at Mayence after 1137. In 1136-1139 the Convent and Church of Himmerodt, near Treves, were built, but they were soon replaced by a larger structure. The Church of the Augustines at Mittelheim is a basilica with a wooden ceiling (1131-1140).

A great conflagration in 1149 laid the larger part of Cologne in ashes, but it was at once rebuilt. Most of the churches either fell a prey to the flames or were damaged so that scantely more than some fragments of walls remained of the earlier period; then were erected those magnificent structures which are the pride of the city. The Church of the Apostles (*pl.* 24, *fig.* 11; *pl.* 25, *fig.* 3), Great St. Martin, the choir of St. Gereon (*pl.* 25, *fig.* 7), etc., were completed more or less quickly. The old cathedral at the same time received a stone vaulting.

The beautiful double church at Schwarzhheindorf, near Bonn, belongs to the years 1143-1148. The eastern portion of St. Gereon at Cologne was dedicated between the years 1151 and 1156. The Church of St. Remigius at Ingelheim was erected in 1154, and the Cistercian church at Eberbach—the original eastern part of which is shown on Plate 24 (*fig.* 9), and is exactly like that of most Cistercian convents—was founded 1150-1156. Archbishop Hilinus of Treves (1152-1169) enlarged his cathedral. In 1159 the Cathedral of Speyer was burned, and larger buildings were deemed necessary. About 1170 two towers were built at Cologne Cathedral; in 1172, Great St. Martin's at Cologne, in 1173 the church at Petershausen, begun eleven years before, in 1170 the new minster at Zurich, and in 1178 the new church at Hillerodt, were consecrated. In 1181 there was another dedication of the Cathedral of Worms, which was at that date, as regards its exterior, in the state in which it exists to-day, with the exception of a few later additions. This cathedral, which has four towers, is represented on Plate 25 (*fig.* 1).

In 1182 the *Liebfrauenkirche* (Church of Our Lady) at Coblenz was founded, in 1185 the Cathedral of Basle was remodelled, in 1196 that of Treves was dedicated anew, and in 1197 that of Mayence. Other Rhenish buildings of the twelfth century are St. Castor at Coblenz, St. Genevieve at Andernach, the choir of the minster at Bonn, the flat-ceiled Church of St. John at Niederlahnstein, etc.

In Southern Germany the architecture of the twelfth century did not find the fruitful soil it met with on the Rhine; it fell behind alike in grandeur of design, in poetical aspiration, in elegance of proportions, and in delicacy of ornament. The structures are a few rich convents or municipal collegiate institutions which were finished as flat-ceiled basilicas, either with pillars or stout, rapidly-tapering columns with cubical capitals between the nave and the aisles.

The most considerable of these buildings are the church at Alpirsbach—really a work of the eleventh century, since it was consecrated

in 1098—the churches at Ellwangen (1100–1124?), Sindelfingen, Faurn-dau, and Denkendorf (founded in 1124), the minster at Biburg (1125–1150), St. George at Augsburg (1135–1142), and the church at Maulbronn (1146–1178; *pl.* 26, *fig.* 1), in which latter church a transept appears externally, while internally three lower chapels and a fourth equal in height to the side-aisles and of corresponding width occupy the ground-floor, and there is a great hall above on each side. The church at Weingarten was completed in 1147, that of Herrenalb in 1148, and at about the same period the Church of the Premonstratensians at Windberg, in the Bavarian Forest, and those of Comburg, St. Gilgen, Murrhardt, and St. John at Gmünd, all in Swabia; the church at Altenstadt in Bavaria and the cathedral at Passau after 1181, etc. In Austria the erection of the collegiate Church of the Holy Cross near Vienna (1135–1187) is noticeable.

In *Saxony* the flat-roofed basilica with arcades borne on pillars was used almost exclusively until the close of the twelfth century, and the vaulted structure first appears here very late through the influence of the Rhenish structures. We may mention the church at Huyseburg—commenced in the eleventh century and consecrated in 1121—the church at Quedlinburg (1129), the Church of Our Lady at Halberstadt (1135–1146), that at Hecklingen (1130), St. Godehard at Hildesheim (1133)—with an aisle around the choir and three chapels adjoining it—and that at Königsutter, founded in 1135 and having a vaulted nave (*pl.* 24, *fig.* 13). To the middle of the twelfth century belongs the church at Hamersleben. After a great conflagration, in 1162, the previously-mentioned Church of St. Michael's at Hildesheim was restored, and consecrated in 1184. The same year is that of the erection of a church at Wechselburg. The Cathedral of Brunswick, one of the few entirely vaulted churches, was commenced in 1171 and finished at the close of the century, and in 1172 the church at Gandersheim obtained its vaulting. After mention of the Convent of Neuwerk at Goslar, we will pass to the lowlands of the north-east of Germany, where a series of structures were built of brick from the clay-beds of those districts.

North-east Germany.—These regions received Christianity and the civilization of the West at a comparatively late period. The seed sown by Otho the Great did not spring up there; the cathedral built by him at Brandenburg (949) soon fell to the ground (983). The Slavic prince Pribislav, who had become a Christian in 1136, built a church on the Harlungerberg, near Brandenburg, and buried there his uncles Herman and Siegfried and his father, Meinfried, who had been killed in 1126 because he had favored Christianity. Pribislav was also buried here in 1142. This church consisted of a central structure with four towers, and was famed throughout the entire Middle Ages in Germany as a place of pilgrimage. The church no longer exists, and it would be difficult to prove that the one demolished in 1722 was that of Pribislav. but the old plan as the

structure destroyed in 1722, which may have been erected at the beginning of the thirteenth century.

Havelberg—taken in 1131 by the emperor Lothaire, in 1136 again in the hands of the Slavs, in 1137 reconquered—seemed in a most unpromising condition when Bishop Anselm, who had been expelled by the Slavs, again took charge of the diocese, in 1144. He devoted himself in particular to the colonization of the region, and in conjunction with the Margrave Albert of Brandenburg led colonists there from the Netherlands in 1146–1149. The colonists, accustomed to brick buildings, gave great impetus to the architecture of these parts. He directed the erection of the Convent of Jericho, which was completed in 1144, but whose church, which still exists, was built in 1149–1159. It is a three-aisled basilica with a flat ceiling and columns and with widely-projecting transepts, a square chancel with an apse, and two secondary choirs ending in apses. A two-aisled crypt under the chancel and intersection rises high above the floor of the nave; so that the choir is reached only by two narrow, steep flights of steps. There are two towers at the west end.

About 1151 the Church of St. Jacob at Seehausen was built, and in 1157–1188 the convent-church at Diesdorf, a vaulted pillar-basilica. In 1157–1160 the conventual Church of Krewese was built in heavy massive forms of granite fragments; the side-aisles were originally vaulted, but not the central one. Pribislav of Brandenburg also founded the Church of St. Godehard in that city; it was destroyed in 1156, but was soon reconstructed. In the present church only the western portion of the original building—which portion was built of granite—is still extant. In 1170 followed the dedication of the Cathedral of Havelberg, and in 1165 was laid the foundation of the Cathedral of Brandenburg; this was finished in 1194, and the greater part of it still exists in the present structure.

To the twelfth century belongs also the Church of St. Nicolas at Brandenburg, of which structure the foundations of the nave and the eastern part are still extant. The conventual church at Dobrilugk, which was erected after 1181, appears to have had all the aisles vaulted, although the vaulting itself belongs to a later time. The pillars are plain, with a projection for the reception of the transverse arches of the aisles, and every other one has a similar projection for those of the central aisle. Choir and transepts form three equal squares around the intersection, and a single apse closes the choir. The Convent of Arendsee contains a vaulted pillar-basilica founded about 1184. There were erected in 1186 the Church of St. Stephen at Tangermünde, and in 1190 the Church of St. Mary at Salzwedel.

D. ITALIAN ROMANESQUE, TENTH TO TWELFTH CENTURY.

The *Political* relations of Italy were such that its art diverged in more *directions* than did that of Germany. In describing Byzantine and Moorish art we have noticed that both held sway in the territories of the

Eastern Roman empire until the twelfth century, and even longer. We have seen that Venice built St. Mark's Church in Byzantine style, and that its other buildings also followed Oriental tendencies. But Rome held fast to the old basilica, the superficies of which decreased, while, owing to Northern influences, the proportion of height became greater.

Old Rome had even in the fourth century been compelled to give up a portion of its magnificent structures for the erection of new edifices, and later on history has more to tell of subversion than of construction. The ruins offered materials so rich and so abundant that they, more than the influence of those ancient structures which yet stood erect, impeded Rome's progress; so that from the ninth to the twelfth century, or even longer, though the metropolis of the Church, she did not advance a single independent architectonic idea in church-construction. Even the palaces were but patchwork formed of antique fragments, except for the introduction of the element of fortification, which antique art had not cared to admit into the streets of the city, but had confined to its walls. Examples of this barbarous patchwork are the so-called "House of Pilate" and a palace of Nicolas the Great, son of Crescentius, who was beheaded in 998.

The Roman basilicas of the twelfth century still show the combination of the architrave with the range of columns, as in the more modern parts of San Lorenzo, in San Crisogono (1128), and in Sta. Maria in Trastevere (1139). SS. Vincenzo ed Anastasio is a sufficiently rude pillar-basilica. Novel, but erected under foreign influence, is a series of brilliantly-decorated and ornately-detailed works of small area which are ascribed to the artist-family of the Cosmati. Here belong the transepts of S. Paolo (*pl.* 27, *fig.* 5) and S. Giovanni in Laterano, together with ambones, tabernacles, etc., in S. Lorenzo, S. Clemente, Sta. Maria in Cosmedin, and other churches.

The Architecture of Upper and Middle Italy displayed a more independent development, for here there was not that abundance of antique monuments awaiting the spoiler nor that uninterrupted tradition which swayed Rome. Two factors were important in the development of Italian architecture. One was the Empire, whose rule was acknowledged as well here as in Germany, although conflicting interests manifested themselves here more defiantly than in the native land of the emperors. The Empire established relations with the North which could not remain without influence upon the development of Architecture. Another still more essential factor was the circumstance that it was neither the emperors nor the princes, nor yet princely bishops, who erected the Italian architectural monuments, but powerful cities which had at that period an independence and a political influence that the most important German cities were only beginning to acquire. In Italy the cities were already the centres of culture—not because of the splendor of a bishopric or of a princely court, but because of the wealth, intelligence, refinement, and artistic taste of their citizens.

In Italy as well as in Germany the church-architecture, being the real exponent of architectonic ideals, had retained the plan of the basilica together with smaller circular structures. The churches are mostly edifices with two aisles and a more elevated nave, the walls of which latter rest on columned arcades. Along with vaulting, piers came from the North—partly from Germany, and partly from France. What essentially distinguishes Italian churches from the German is the greater freedom of the spaces and the lack of towers in actual combination with the church itself. There is in the German architecture of that period, in the elevated, majestic calm and solemn severity which are so harmoniously combined into a characteristic whole, something of the ascetic and monkish to which the freer ways of Italy were opposed, and which is only realized in individual works that were evidently erected under Northern influence.

In Germany the great cathedrals, considered in relation to their expression, belong to God on high: their towers rise toward heaven and are mirrored in the waters of the rivers for God's honor and glory, and they rule the entire city with the peace they bring; the convent-churches praise God on lonely heights and in quiet valleys, breathing peace and spreading peace around. In Italy the cathedrals belonged to the citizens, who built them for the entire community—not only to glorify God, but also as the Palladium of the popular freedom. The Italian *duomo* was built, as was the Grecian temple, for the common good and to inspire the citizens with local patriotism. This idea, which finds its expression in the widely-separated and slender supports of the churches, found monumental vaulting little suited for its purpose, but the wealthy art-loving citizens desired rich ornamentation in which there was a ray of fancy; therefore the façades, which in Germany rise smooth and plain, were in Italy bedecked with columned galleries and arcaded work.

While Germany soon abandoned the use of various-colored stones as a polychromatic decoration of the walls, the use of this method of decoration continually obtained wider application in Italy, and was fostered by the abundance of colored marbles fitted for such purposes. While in some districts the exterior of the west façade of the churches maintains the form of the three aisles with their roofs, other structures have a symmetrical wide frontispiece with a single pediment masking the three aisles and made attractive by sumptuous galleries.

The double choir which characterized the German cathedrals, so specially designed for the clergy, did not suit Italian taste; but the crypt was always laid out upon a grand scale, entirely free from the aisles, and was employed, not as a quiet subterranean receptacle for the relics to which the assembled people drew near in awe, but as the burial-place of the patron saints of the city, who belonged to all. These relics every one could view; round them the entire people could assemble, whether in ardent supplication or with rejoicings and thanksgivings. They belonged to the entire people, who perhaps with armed hand had taken them from neighboring cities, and who were ever ready to make secure their posses-

sion against robbery or abduction, as the ancient republics protected their Palladiums.

In this spirit the great Italian churches speak to us to-day. Like the German churches, they are the work of many generations; but the living interest which the entire people felt in them as their property led even more than in Germany to perpetual additions and alterations, although the want of money was not here, as in Germany, the prime cause of the delay. For this reason thorough investigation is needed even more than in Germany before a historically-transmitted date—often one inscribed on the building—can be applied to the still-existing structure in all its parts, for this date may belong to special parts only; consequently, the reader should bear this in mind when we direct his attention to a building without giving a fixed date.

As such we mention the Cathedral of Fiesole (1028); S. Flaviano at Montefiascone (1032); the Cathedral of Pisa (*pl.* 27, *fig.* 2), which was begun in 1063; the crypt of San Fermo at Verona (1065); the Cathedral of Empoli, the façade of which bears the date 1093; that of Modena, begun in 1099 (*fig.* 10); that of Viterbo, a columned basilica; the Church of S. Donato and the cathedral at Genoa; S. Michele at Lucca; the cathedrals of Prato and Pistoja; the Church of S. Miniato at Florence, the interior of which is shown in Figure 1; the façade of the Cathedral of Verona (*fig.* 8), with its characteristic example of an Italian portal; the Church of S. Zeno Maggiore (1138) at the same city (*figs.* 6, 9); the Cathedral of Zara, in Dalmatia (*fig.* 7); that of Casale-Monferrato (finished in 1107); that of Novara; S. Michele and S. Pietro in Cielo d'Oro at Pavia, and San Ambrogio at Milan; the Cathedral of Parma, belonging to the second half of the twelfth century; that of Piacenza, in which a tower rises behind the façade on one side, similar to the tower of the Cathedral of Trau, in Dalmatia (*fig.* 4). The three apses of the last-mentioned church recall German architecture, though Dalmatia generally follows Italian traditions. Some of these churches were not finished until the thirteenth century; thus S. Martino at Lucca was completed in 1204, Sta. Maria in Toscanella in 1206, the others later.

The Cathedral of Parma as it stands to-day may in its entirety be considered rather a work of the thirteenth than of the twelfth century; we shall therefore have to speak of it again, as of some related churches. But a number of baptisteries must be mentioned here, all of them, like the churches, decorated with superficial arcades and galleries, in some cases over their entire surface. Such are the Baptistery of Pisa (1153), that of Cremona (1167), and those of Parma and Asti. Peculiar small churches are S. Tommaso in Limine near Bergamo and the church at Gravedona.

The Campanili.—The development of the campanili of Italy must be noted as peculiar. These bell-towers are almost without exception separated from the church. One of the best known is the Leaning Tower of Pisa, which is surrounded with galleries; this is shown in the view of the cathedral (*fig.* 2). It was built in 1174 by a German and an Italian archi-

tect working in conjunction, as was also the fine campanile within Diocletian's palace at Spalato.

E. FRENCH ROMANESQUE, TENTH TO TWELFTH CENTURY.

What is now called France was after Carolingian times a number of countries entirely independent of one another, each in a similar condition to Germany. The eastern portion formed the kingdom of Lorraine; interposed between Germany and France, this soon became a part of the Empire. The southern part, allied to Italy and adjoining it, was the territory of the counts of Toulouse, Gascony, and Aquitania; in the north-west was Brittany; in the north, Normandy; while the eastern tract adjoining Flanders constituted Champagne and Burgundy.

France proper, where the kingly power was direct, consisted at first of only a small district with Paris for its centre; but it spread more and more, until in the thirteenth century it had grown into a powerful kingdom nearly including what is now Central and Northern France, leaving as independent states Brittany in the west, Guyenne, Toulouse, and Auvergne in the south, and the Bourbonnais, Burgundy, and Champagne in the east, but already including, toward the south, Tours, Bourges, and Poitiers, and in the north, Bayeux, Caen, Rouen, Soissons, Laon, and Amiens.

Throughout the entire province Roman civilization had taken deeper root than in Germany. France had become less the prey of strangers than Italy; the Teutonic people had a less secure hold there, and the Teutonic blood had permeated the population to a less extent than in Lorraine. The nucleus of the heterogeneous population was formed by the Celtic race, through which antique traditions were here kept alive longer even than in Italy, and which long before had become thoroughly Romanized. Thus, in fact, France, even after the death of Charlemagne, continued to be the centre of civilization, though Germany was the centre of political power.

When afterward, as in Germany, there came on a period of constant wars in which each individual fought for whatever good his sword could bring him, culture sank more and more; still, both art and knowledge found a more mellow and fertile soil for their seed among all the people than in Germany, where only certain classes welcomed them. Even the greater mobility of the character of the people impelled them to attempt an active development. Thus, French architecture from the tenth to the twelfth century shows greater mobility and a more thoroughly-finished detail than the German. A brilliant diversity carried into fancifulness developed itself upon French soil, but not that all-pervading harmonious repose exhibited by German structures. The great Ideal which we have designated as the Ideal of the age had not so deeply permeated the consciousness of the entire population of France, which still strove for an ideal.

Abbey of Cluny.—The founding of the magnificent Abbey of Cluny by

sion against robbery or abduction, as the ancient republics protected their Palladiums.

In this spirit the great Italian churches speak to us to-day. Like the German churches, they are the work of many generations; but the living interest which the entire people felt in them as their property led even more than in Germany to perpetual additions and alterations, although the want of money was not here, as in Germany, the prime cause of the delay. For this reason thorough investigation is needed even more than in Germany before a historically-transmitted date—often one inscribed on the building—can be applied to the still-existing structure in all its parts, for this date may belong to special parts only; consequently, the reader should bear this in mind when we direct his attention to a building without giving a fixed date.

As such we mention the Cathedral of Fiesole (1028); S. Flaviano at Montefiascone (1032); the Cathedral of Pisa (*pl.* 27, *fig.* 2), which was begun in 1063; the crypt of San Fermo at Verona (1065); the Cathedral of Empoli, the façade of which bears the date 1093; that of Modena, begun in 1099 (*fig.* 10); that of Viterbo, a columned basilica; the Church of S. Donato and the cathedral at Genoa; S. Michele at Lucca; the cathedrals of Prato and Pistoja; the Church of S. Miniato at Florence, the interior of which is shown in Figure 1; the façade of the Cathedral of Verona (*fig.* 8), with its characteristic example of an Italian portal; the Church of S. Zeno Maggiore (1138) at the same city (*figs.* 6, 9); the Cathedral of Zara, in Dalmatia (*fig.* 7); that of Casale-Monferrato (finished in 1107); that of Novara; S. Michele and S. Pietro in Cielo d'Oro at Pavia, and San Ambrogio at Milan; the Cathedral of Parma, belonging to the second half of the twelfth century; that of Piacenza, in which a tower rises behind the façade on one side, similar to the tower of the Cathedral of Trau, in Dalmatia (*fig.* 4). The three apses of the last-mentioned church recall German architecture, though Dalmatia generally follows Italian traditions. Some of these churches were not finished until the thirteenth century; thus S. Martino at Lucca was completed in 1204, Sta. Maria in Toscanella in 1206, the others later.

The Cathedral of Parma as it stands to-day may in its entirety be considered rather a work of the thirteenth than of the twelfth century; we shall therefore have to speak of it again, as of some related churches. But a number of baptisteries must be mentioned here, all of them, like the churches, decorated with superficial arcades and galleries, in some cases over their entire surface. Such are the Baptistery of Pisa (1153), that of Cremona (1167), and those of Parma and Asti. Peculiar small churches are S. Tommaso in Limine near Bergamo and the church at Gravedona.

The Campanili.—The development of the campanili of Italy must be noted as peculiar. These bell-towers are almost without exception separated from the church. One of the best known is the Leaning Tower of Pisa, which is surrounded with galleries; this is shown in the view of the cathedral (*fig.* 2). It was built in 1174 by a German and an Italian archi-

tect working in conjunction, as was also the fine campanile within Diocletian's palace at Spalato.

E. FRENCH ROMANESQUE, TENTH TO TWELFTH CENTURY.

What is now called France was after Carolingian times a number of countries entirely independent of one another, each in a similar condition to Germany. The eastern portion formed the kingdom of Lorraine; interposed between Germany and France, this soon became a part of the Empire. The southern part, allied to Italy and adjoining it, was the territory of the counts of Toulouse, Gascony, and Aquitania; in the north-west was Brittany; in the north, Normandy; while the eastern tract adjoining Flanders constituted Champagne and Burgundy.

France proper, where the kingly power was direct, consisted at first of only a small district with Paris for its centre; but it spread more and more, until in the thirteenth century it had grown into a powerful kingdom nearly including what is now Central and Northern France, leaving as independent states Brittany in the west, Guyenne, Toulouse, and Auvergne in the south, and the Bourbonnais, Burgundy, and Champagne in the east, but already including, toward the south, Tours, Bourges, and Poitiers, and in the north, Bayeux, Caen, Rouen, Soissons, Laon, and Amiens.

Throughout the entire province Roman civilization had taken deeper root than in Germany. France had become less the prey of strangers than Italy; the Teutonic people had a less secure hold there, and the Teutonic blood had permeated the population to a less extent than in Lorraine. The nucleus of the heterogeneous population was formed by the Celtic race, through which antique traditions were here kept alive longer even than in Italy, and which long before had become thoroughly Romanized. Thus, in fact, France, even after the death of Charlemagne, continued to be the centre of civilization, though Germany was the centre of political power.

When afterward, as in Germany, there came on a period of constant wars in which each individual fought for whatever good his sword could bring him, culture sank more and more; still, both art and knowledge found a more mellow and fertile soil for their seed among all the people than in Germany, where only certain classes welcomed them. Even the greater mobility of the character of the people impelled them to attempt an active development. Thus, French architecture from the tenth to the twelfth century shows greater mobility and a more thoroughly-finished detail than the German. A brilliant diversity carried into fancifulness developed itself upon French soil, but not that all-pervading harmonious repose exhibited by German structures. The great Ideal which we have designated as the Ideal of the age had not so deeply permeated the consciousness of the entire population of France, which still strove for an ideal.

Abbey of Cluny.—The founding of the magnificent Abbey of Cluny by

William of Aquitaine in the year 909 had become important and decisive for the development of architecture. Not only did the order for which it was built spread beyond the confines of France, but from it church-architecture also received a powerful impulse. The original structure is indeed no longer extant, and in France generally few buildings of that period exist. We have, however, as much information concerning a brilliant architectural activity as we have relating to that of Germany. Yet we cannot follow it into details.

A building of the beginning of the eleventh century, without doubt erected in 1007 under the influence of Cluny, is the Church of St. Philibert in Tournus, the nave of which still exists. Massive round pillars part the church into three aisles. Transverse arches span the nave from pillar to pillar, and the walls, carried on these, are connected by barrel-vaults, a series of which thus roof in the nave, while the vaulting of the aisles serves as a buttress to that of the middle portion.

The Church of Cluny, one of the most magnificent in its dimensions, had five aisles, which were broken by two transepts. At the east end there was an apse with a surrounding aisle, and around this a semicircle of five small chapels like so many apses, and two such apses face the east on each of the arms of the transepts. The two arms of the smaller eastern transepts ended in an apse to the north and south. At the west end a broad portico, or narthex, stood in front of the richly-decorated portal; in front of this rose a double-towered western façade. The church was commenced in 1089 and finished in 1130; it now lies in ruins.

What a fulness of ideas is displayed in this ground-plan in comparison with the simple scheme of a German church! The whole church was vaulted, but the entire length of the nave had a barrel-vault strengthened by transverse arches which corresponded to the piers. Both transepts, also separate, had tunnel-vaults, but the side-aisles were covered by groined vaults. The pillars were not plain and massive, like the German ones, but were elaborately moulded. The outer walls took the thrust of the vaults upon the buttresses, which had an uncommonly varied detail. This system, more or less simplified, is spread through all the South of France; everywhere the nave is covered with a barrel-vault.

The Church of Notre Dame du Port at Clermont belongs here, the chancel-aisle of which has four apses, while each wing of the transept has one. The side-aisles have groined vaulting, above which are galleries with a lean-to half-tunnelled vault which acts as a buttress to the vaulting of the nave. The nave is thus left without direct lighting, but the transept rises high above the nave and choir, and formerly bore in its centre a cupola-like tower (*pl.* 28, *fig.* 2). The exterior is yet more conspicuous through its decoration of colored stone (*fig.* 3). There is in this edifice a grand poetry far superior to what appears in the German buildings of the same age.

The church at Conques (*fig.* 7) and the cathedral at Puy-en-Vélay, both of the twelfth century, are of similar construction, and the churches of St.

Gilles and St. Trophime at Arles are also related to Notre Dame. This last church, whose rich portal and beautiful cloister are shown on Plate 28 (*figs.* 5, 6), is ceiled throughout its ancient portions with barrel-vaults strengthened by transverse arches. In this place belong the cathedrals of Avignon, Valence, and Carcassonne, with the church of the Ainay Convent at Lyons. In the last-mentioned churches there are no galleries above the side-aisles, but the latter are covered with half barrel-vaults. The vaulting of the church of Paray le Monial is pointed (*fig.* 8), with elegant details, and so is that of the Cathedral of Autun, commenced in 1132. In this church the nave receives some light under the barrel-vaulting, and the side-aisles have groined vaults.

The Church of Notre Dame la Grande at Poitiers, whose fanciful façade seems almost a copy of a reliquary (*fig.* 4), has a tunnel-vault over the nave; so has the Cathedral of Le Mans, the nave and transept of which may, however, have formerly been unvaulted. A building which exhibits in itself the entire development of the French style is the Abbey-church of St. Denis near Paris. Even in the twelfth century much labor was bestowed upon it; what still exists is the façade with two towers and three grand portals, like the façades of the churches of Normandy.

In Normandy a peculiar school more nearly related to the German was developed. Antique remnants which display a primitive crude character are preserved in the Abbey-church of St. George at Bochartville, which belongs to the time of William the Conqueror. The ruins of the abbey-church at Jumièges are ascribed to the same period, since the church was consecrated in 1067.

William the Conqueror and his spouse founded in 1066 the men's Abbey of St. Étienne (Abbaye aux Hommes) and the women's Abbey of Ste. Trinité (Abbaye aux Dames) at Caen. Both churches seem, like the German ones, to have taken a long time for completion; so that many later elements have crept into the original plans. They had three-aisled naves and a transept without side-aisles, of which that of the men's abbey terminates in an apse on each projecting wing. The choir had lower side-aisles, like the nave, and an apse which was without an aisle around it. Above the intersection was a lantern, and the west front had two towers (*fig.* 1). It is scarcely credible that the nave was originally vaulted. In what way the original execution was or may have been followed out may be seen from the crude details of the crypt and from the choir of the Abbaye aux Dames. The choir of St. Étienne may have been like this, as it was consecrated in 1077; afterward it was superseded by an early Gothic structure. The Church of St. Nicholas at Caen is similar to these.

F. ENGLISH ROMANESQUE.

William, who conquered England, took with him to that country his Norman architects, who upon a new soil which had long been Chris-

tian, and on which the old Teutonic culture was yet preserved alive, inaugurated a new epoch of architectural development, but still under the influence of the not wholly-smothered ancient Saxon culture, which introduced some strange elements into the Norman style.

Characteristics of English Romanesque.—Massive pillars, some simply round, others shafted, bear the nave walls; the arches of the arcades are divided into several planes; the walls above the arcades are enlivened by a triforium, or arcaded gallery; and the nave has a wooden roof, except where vaulting was added in later times. A noticeable peculiarity of the English churches is the great length of the choir, which has side-aisles like the nave and is often of equal dimensions. The transepts are also of considerable length, and are provided with aisles—at least, on the east side; the apses frequently give way to the continuation of the choir. A massive tower rises at the intersection and smaller ones at the ends of the nave, choir, and transepts.

Among the oldest edifices belonging to this period is the church in the Tower of London, which ends in a half-round apse surrounded by the aisle. There is a gallery above the side-aisles, and this, as well as the nave, has barrel-vaulting, while the aisles below have groined vaults. Among the most important English buildings of the close of the eleventh and during the twelfth century are the cathedrals of Norwich (founded in 1096) and Peterborough (1117–1140), the abbeys of St. Albans, Buildwas, and Waltham, and Castor Church, Northamptonshire. The cathedrals of Canterbury and Winchester, the Abbey-church of Malmesbury, the cathedrals of Durham and Gloucester, the Abbey-church of Croyland, etc., may also be mentioned; yet it should be remembered in all cases that the original parts of the structure must be kept distinct from the later portions.

G. SPANISH ROMANESQUE.

So far as the Spanish peninsula was not subject to the influence of the Moors—either to their direct rule, or, after their overthrow, to their architectonic traditions—it was subject to the spirit of the French. In some cases French architects supervised Spanish works. Thus the walls of Avila (1090–1099) were built by a French architect, and the Cathedral of Tarragona is said to have been erected by another.

Vaulting.—In the Spanish buildings from the close of the eleventh century we therefore find the barrel-vault as the covering of the nave, while the side-aisles had half-vaults of the same kind, forming an abutment to the central one. Entire barrel-vaults on all three aisles are also met with, and, exceptionally, galleries over the side-aisles. The transepts project considerably. The choir has side-aisles, and three apses, two of which open into the transept, form the principal choir. The roofs are flat. Groined vaulting first began to replace the barrel-vault in the nave about the close of the twelfth century.

One of the oldest Romanesque churches in Spain is the eleventh-



century Church of S. Pedro at Huesca. S. Pablo del Campo at Barcelona, a Benedictine church, was built between 1117 and 1127; a cupola rises at the intersection, and three apses form the east end. The Church of S. Pedro de las Puellas at the same place is similar. S. Pedro de las Galligans at Gerona has a barrel-vault buttressed by two half-barrel vaults over the aisles.

Shrine of S. Jago.—The famous shrine of S. Jago de Compostella in Galicia is throughout a French work both in plan and in execution; it is essentially a repetition of St. Sernin at Toulouse. A three-aisled nave borne by shafted pillars, groined vaulting in the side-aisles with galleries over, a middle aisle with barrel-vaulting, the transverse ribs or arches of which rest on half-columns which, forming part of the piers, reach from the pavement to the vaulting, are the chief points of its construction. The transept also has side-aisles with galleries over. A lantern rises at the intersection, and each wing of the transept has two apses on the east side. The choir has side-aisles which run around the great apse. Five small apsidal chapels open into the aisle. It was begun in 1078 or 1082, but it was not until the beginning of the twelfth century that much progress had been made. The transept bears the date of 1154; from the year 1168 Master Matthews worked upon it, and in 1188 he erected the rich portal.

S. Isidoro at Leon was dedicated in 1149, and has a three-aisled nave with barrel-vaulting in both the centre aisle and the widely-projecting transepts, while the side-aisles have groined vaulting. Stilted and cusped arches in the transept recall the Moorish spirit. S. Millan at Segovia, a church of the twelfth century, also has barrel-vaults; it has three apses toward the east, with an octangular cupola over the intersection; S. Esteban and S. Martin in the same city are similar in their arrangement. In these three churches there is an exact correspondence in the open arcades which extend around on the exterior of the side-aisles.

First Appearance of the Gothic in Spain.—The pointed arch makes its appearance in the second half of the twelfth century, as in the barrel-vault of S. Nicolas at Gerona, a church without side-aisles; in the church at Elne, now belonging to France; and in the Cathedral of Lugo, some parts of which are round-arched, while others are pointed. The structure was executed in 1129-1177. Among the late Romanesque edifices is the Cathedral of Salamanca, commenced about 1178; it is constructed entirely with pointed arches and domical vaulting. Similar to it is the Cathedral of Zamora, for the completion of which the date 1174 is indeed given, but cannot refer to the entire structure.

The intimate relationship of the Spanish architecture to the French need not surprise us: it is based upon circumstances. As Christianity in Spain lived in constant war with the Moors, it would naturally seek a definite outward expression which should bear witness to this opposition. This expression it could find only by the strictest conformity to the circle of ideas and forms of its Christian neighbors. So long as the war with



the Moors claimed all the intellectual power of the country, France, as the nearest neighbor, exercised a predominant influence. It must have preponderated so much the more since France was in the twelfth century the land of chivalry which inspired the pious to do battle with the unbelievers.

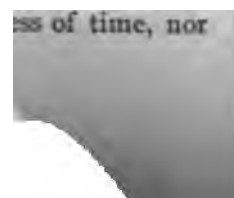
The Crusades.—This chivalry impelled France out of the West into the East, there to fight with the unbelievers, to struggle to free from the hands of the infidels the land where our Lord had lived, to set up there new kingdoms for those who thirsted for larger fiefs than they could hope to acquire at home. To these the love of adventure was sufficient, the desire to prove themselves noble cavaliers by personal courage and deeds of bravery.

It has before been stated (p. 146) that the great ideal of eternal peace under the ordained authorities prevailed principally in Germany, and that France possessed least of it; we may add that this ideal was a truly spiritual one, related to the contemplative life of the cloister. We have said that the architecture of Germany was the purest expression of this ideal, and, as Germany was the strongest political power in Europe, its architecture may be reckoned the purest and most complete expression of the culture of the period: in this sense we may say that Germany stood at the highest point of civilization. But only in this sense; in fact, another very different comparison may be made.

That chivalry which sought neither rest nor peace, but activity and battle, rose more and more in opposition to contemplative calm, and it was the Crusades that gave the French and their ideas the supremacy and made them the unopposed leaders of civilization before the twelfth century was at an end. As in France, so more and more everywhere, spread the spirit which sought to win heaven, not by meditation, but by battle. Yet this ideal was not rude war; it was not to slay and to devastate: fixed regulations made war a knightly game, and the chivalric spirit longed not simply for courage and strength, but for magnanimity, generosity, and piety as its inward qualities; for refinement, gallantry toward women, and an awakened taste for the fine arts—in a word, for culture—as the outward qualities of the cavalier. Chivalry, while not conforming itself exclusively to the inner life of man, had rendered the world more worldly than that ideal of peace would have been able to do, and by so doing it had conquered the world.

Chivalry, which may be considered a refined worldly idea, had to pass through a course of development, but this development was retarded for two centuries through the belief, entertained at the beginning of the eleventh century by the better portion of mankind, that the world was near its end. This development is seen in French architecture as contrasted with the German. The latter had at the beginning of the period a clear mark before it; grand harmony lay in it from its inception, or was at least present in the germ.

But the details did not notably develop with t



did the taste for rich decoration essentially increase. It was otherwise in France; there, even in the building of churches, which alone assigns ideal tasks to the architects, harmonious execution was not attained. Unassimilated elements, diverse and foreign, stand near together, each making its individual power felt according to the idea and inclinations of men, but more worldly and more free than in Germany. Little by little Architecture attained organized proportions; little by little the love of variety led to design, to definite execution, to a rational employment of materials, to richness and elegance of details, and to a wealth of ideas in the decoration.

Influence of the Church on Architectural Development.—In France as in Germany it was the Church that inaugurated the development. The clergy were the representatives of the culture of the time: they were the savants and the poets, the architects and the sculptors. As the German clergy embodied in themselves the expression of the German spirit, so that of the French people was embodied in the French clergy. Indeed, the clergy played in France a greater part in the education of the laity than they did in Germany, and contributed not a little to turn the widespread want of culture into chivalry. Little by little, under their influence, the laity became so possessed of that spiritual power that chivalry no longer required spiritual guidance to attain the climax of outward refinement, and Architecture no longer asked for the guidance of an ecclesiastical architect, but strove on rapid wings to reach the height of an ideal of which only worldly temerity could dream, and which spiritual contemplation could not attain.

H. FRENCH ARCHITECTURE FROM THE CLOSE OF THE TWELFTH CENTURY: TRANSITION TO THE GOTHIC.

We left the development of French architecture in the middle of the twelfth century (p. 169). The nave of the church at Vezelay was built about this time. It presents the appearance of a new *motif* in France: it has a groin-vaulted nave. It shows that the Cistercians, whose influence increased with the extension of the order, had brought this manner of ceiling the nave from the Rhine into France. It needed, however, but this one element to give an impulse to the development of architecture, causing it to make within a brief period progress such as is scarcely afforded in another instance in the history of art.

Constructional Development.—We have before stated (p. 167) that French architecture had not that harmonious unity, that expression of rest, exhibited by the German: the character of the people gave it, rather, an expression of unrest. To this it is owing that the architects no longer allowed the walls to surround the church in all their greatness and unity, varied only with light artistic detail, but strengthened them with buttresses which destroyed this unity. These were the less required since the barrel-vaults which covered the aisles exercised an equal thrust upon every point of the walls, and the transverse arches conveyed so inconsiderable a por-

tion of the lateral thrust to the points supported by buttresses that the latter were of scarcely any constructive use when the walls were not themselves sufficiently strong, and thus the æsthetic expression was exactly the reverse of what it ought to have been, according to the usual architectonic requirements.

Groined Vaulting.—With groined vaulting, on the contrary, the thrust is concentrated on certain points. There is a constructive need to strengthen these points; to make that strengthening visible was to do what was authorized by internal needs, and the outward effect was that which really expressed the system of vaulting. As soon as groined vaulting was employed to cover wide spaces the pillars had to bear all the weight; the walls between them had no more to carry, and simply limited the enclosed spaces: they might even be dispensed with without altering the constructive relations of the system. Groined vaulting, therefore, conduced to the realization of a pure pillar system. This corresponded with French taste; it was in technique what chivalry was in life: certain props did the entire work for the building, and upon these supports all significance was centred.

Transition to Gothic.—Favorable external conditions are always necessary to enable Architecture to take a new flight; these were present to a high degree in France. A series of grand edifices rose one after another, and in their progress was made step by step. A few years later than the Church of Vezelay is its great narthex, which is itself a fully-formed nave. The transverse ribs of the vaulting are pointed; galleries still rise above the side-aisles, but these have also groined vaulting, the cross-ribs of which serve as abutments for those of the centre aisle.

Pointed Arch.—On purely technical grounds the pointed arch had procured a place beside the round arch in France somewhere about the middle of the twelfth century. In every arch and part of an arch the lateral thrust increases as the rise diminishes, and in a semicircular arch the rise is much less in the two lower thirds than in the horizontal upper third. It must also have soon become evident to a people whose gaze was not so completely fixed upon harmonious repose as was that of the Germans that the pointed arch offered constructive advantages over the round arch which were all the more necessary in a barrel-vaulted nave whose buttresses could not be strengthened, and which were the more welcome where a series of arches concentrated the thrust upon one point. The energetic effect had something more chivalric than the softly-curving line of the round arch, and there was thus reason enough for the French to adopt the pointed arch with alacrity.

Pointed Vaulting.—But the Architecture of the age was still more influenced by the greater development of vaulting. Vaults were not rare at the close of the twelfth century, but it was at the commencement of the thirteenth that the system was fully completed. It is very difficult to trace the development of the pointed style with certainty, since so many structures of the transitional period have enti

fallen—since

there is many a *motif* which is not preserved to us in its earliest examples, but only in later ones, and may thus bear a more recent date than that borne by extant *motifs* which have sprung up later.

It is true that in France we meet with simple groined vaults in the side-aisles, in crypts, and in small spaces; that we also find them around the apse of the choir, where the vaulting is somewhat complicated, executed without diagonal ribs in such a manner that smaller, steeper pieces of tunnel-vaulting are cut out of the continuous circle formed by the apse, as, for example, in Notre Dame du Port at Clermont and in the Church of St. Julien at Brioud (Auvergne, 1140); and we also find transverse arches, as in the choir of the collegiate church at Poissy, but in the nave itself we meet with groined vaulting in only a few structures of this date, as at Vezelay, and this may be attributed to foreign, and especially to Rhenish, influences.

It is known to every engineer that a groined vault, which is composed of two segments of semicircular tunnel-vaults, has in its lower third very sharply-marked angles, but that these become flatter and flatter as the crown is approached; so that the line of meeting of the various portions can scarcely be traced. It thus becomes difficult to cut the angle-stones of the ashlar work with that regularity which is desirable for sound workmanship. This difficulty increases with the dimensions of the vault. The precautions adopted in Germany for the security of the crown, all of which tended toward avoiding geometrical regularity, had no great following.

The difficulty is naturally greater the more the vault deviates from the square shape and becomes oblong; therefore at Mayence, Worms, and Speyer a bay of the nave corresponds to two of the side-aisles. This naturally leads to the alternation of the pillars to correspond with the requirements, every second pillar being a main pillar, while the alternate ones may be called secondary. It is only exceptionally (Laach, Vezelay) that the arrangement of oblong central vaults and equal pillars is adopted. The technical difficulties in such cases render it desirable, and it is exacted by the æsthetic effect, that the groins should be marked. This was effected by diagonal ribs.

Diagonal Ribs.—When and where these were first employed can scarcely be known, but certainly earlier in France than in Germany, since in the nave of the Cistercian church at Heiligenkreuz, built 1135–1187, massive diagonal ribs occur. These not only make it possible for the eye to follow the lines of the groining to the crown, but also allow the compartments of the vaulting to be much lighter than they would have to be were there no ribs. To make these compartments still smaller, and further to express the relation between the intermediate pillar and the crown of the vaulting, a rib is thrown from the former to the latter. There are thus six separate sections, each of which forms an independent vault between the transverse and diagonal ribs. Proof of where this method originated is as difficult as it is in the cases before mentioned. France has

a series of examples, as in St. Étienne and Ste. Trinité at Caen, but it is not certain whether this plan was adopted when the building was erected. The similarity of the pillars should not induce us to decide hastily.

While in Germany the alternation of pillars and columns can be seen even in unvaulted basilicas, though the arrangement of the vaulting furnished the motive for this alternation, the tunnel-vaulting used in France gave no occasion for constructing dissimilar pillars. Thus the similarity of the pillars had become so ingrained with the architectonic instinct that the necessity for the alternation was not felt even in hexapartite vaults, so that in the further progress of the development the alternation of the pillars formed the exception. Ste. Trinité (at Caen) perhaps exhibits the intention to use hexapartite vaulting, since when the height of the triforium was reached two shafts were attached at the sides of the shaft which is carried down to the ground.

Church of St. Germain des Près.—Among the most interesting buildings in which the exterior is changed to express the necessities of the vaulting is the choir of the Church of St. Germain des Près at Paris, consecrated in 1163. It is divided by monolithic columns into three aisles. The arcades are broad round arches with roll-mouldings, but at the end of the choir, where the spans are narrower, the arches are pointed. Above these arcades runs a passage, and over this rise marble columns, which are now united by architraves, but were formerly spanned by pointed arches. The vaulting is pointed.

On the exterior the clere-storey has two adjoining pointed windows and a cornice with brackets, while chapels fill up the spaces between the buttresses of the side-aisles. The buttresses rise above the roofs of the side-aisles to half the height of the nave, and arches spring from them to the wall of the latter, to conduct the thrust of the vaults to the outside, and thus to relieve the columns of a portion of their load as well as of the lateral thrust of the groining of the nave. These buttresses and flying-buttresses not only introduce a new method of diversifying the exterior and at the same time express the arrangement of the interior vaulting, but also so far influence the interior itself that the arches no longer need massive pillars, the place of which can be taken by light columns, which are secured against the thrust of the vaults of the side-aisles by the weight resting upon them.

The Church of Notre Dame at Châlons, completed in 1183, makes a brilliant display of a choir with surrounding aisle and a crown of semi-circular attached chapels (forming what is called a *chevet*). Round pillars from whose capitals three shafts rise aloft support the arches of the choir, while the chapels are separated from the aisle by slender columns. Above the aisle of the apse is a semicircular gallery. The windows of the aisle, as well as those of the principal apse, are narrow and high; they are enclosed in pointed arches and placed in groups of three, so that they fill almost the whole of the space between the piers. By this arrangement

the height of the interior is greatly increased. The entire constructive scaffolding is reduced to the buttresses, which project between the chapels, and from each of which a massive flying-buttress is thrown to the walls of the gallery, while above this a second greater flying-buttress springs to the walls of the clere-storey. The pointed arch predominates throughout. The wealth of columns gives to the interior a most poetical charm: the range which stands in front of the crown of chapels produces wonderful perspectives, and the effect is increased by the architecture of the gallery-front and by the columned gallery called the triforium, which stands above the gallery and adorns the part of the wall against which its roof abuts.

Similar is the arrangement of the choir of St. Remy at Rheims, in which, however, the central chapel has several bays of vaulting and projects from the main building, which consists of a three-aisled nave with a three-aisled transept, while the choir has five aisles as far as the chevet. At Blois is the small Church of St. Laumer, begun before 1138 and finished in 1210. This exhibits about the same stage of development. The nave has three aisles; the transept, one. The choir, only two bays in length, has five aisles, the two outermost of which end in semicircular apses, while the inner ones meet by running around the principal apse. Three chapels radiate from the aisles of the apse.

Noyon Cathedral.—A church in which architectural progress is displayed most conspicuously is the Cathedral of Noyon, commenced in 1150, though the choir was not completed until the close of the century and the nave is of the thirteenth century. The plan (*pl. 29, fig. 6*) shows that here, as in earlier examples, the side-aisles of the choir ran around the apse, which, instead of ending in a naked wall, is reduced to piers connected by arches. The upper part of the wall is adorned with a gallery, which runs completely around it, but each internal pier of the apse corresponds to a second massive outer one, and between these, as in the French churches of an earlier period, are small apsidal chapels. The projecting arms of the long transepts end also in an apse.

The Church of Notre Dame at Paris (*fig. 1*), was the third structure upon the site, and was commenced by Bishop Maurice de Sully (1162–1196): the first stone was laid in 1163. At his death he left a sum of five thousand livres for the lead roof of the choir, which was probably at that time nearly ready to be roofed. The nave was completed in the first quarter of the thirteenth century. (The old Church of St. Stephen on the site of Notre Dame was demolished in 1218.) In this edifice of the close of the twelfth century we find the most magnificent arrangement of the choir. It has five aisles, the centre one lofty, the inner side-aisles with a gallery above. The pillars and arches of the choir have the form of massive round columns. The gallery opens toward the middle aisle by an arcade with pointed arches, under which two smaller pointed arches are placed on colonnettes. The profiles of the smaller arches have broad rebates, the angles of which have roll-mould-

ings, and a roll-moulding also runs round the main arch. The windows of the middle aisle were altered at a later date, and were doubtless similar to those which the outside of the entire nave still exhibits—that is, simple round or pointed openings with a colonnette on each side. From the capitals of the pillars three shafts rise aloft and cut through the cornice, to carry the springing of the vaulting.

Notwithstanding the similar section of the pillars, the vaulting is hexapartite. The central shaft of the three on each pillar carries the main rib or an intermediate rib; the side-shafts of the main pillars bear the diagonal ribs, while the side-shafts of the intermediate pillars rise higher, to catch the wall-arches, which on the principal pillars are received on small colonnettes that find a place behind the diagonal ribs, upon the capitals of the shafts which carry them. The intermediate ribs start at the same level as the main ones, and have also the same span. The crown of the vault is no higher than that of the main cross-ribs, and the diagonal ribs approach, therefore, nearer to a semicircle to span the greater width. The considerable elevation of the wall-ribs was now easy to effectuate, since the diagonal ribs made the compartments independent of one another.

The abutments consist of narrow buttresses projecting far beyond the walls of the outer aisles and rising high above their roof. Slight pilasters mark upon the outside of the middle aisle the position of the springing of the vaulting, and against these rest mighty flying-buttresses, which spring over the roofs of the two side-aisles and gallery from the buttresses below. The upper surface of these flying-buttresses has a gabled coping and a channel to convey the rain-water from the roof of the middle aisle. Below this large flying-buttress is a smaller, springing from the buttress to the wall of the gallery. The middle aisle has a broad and far-projecting cornice. The galleries had also a similar cornice, and had simple pointed windows, around the heads of which, on the exterior, ran a hood-mould with chamfered angles. The roofs of the gallery and side-aisles were rather flat. A passage ran behind the buttresses in front of the roof of the side-aisles.

It may be remarked that the existing light flying-buttresses are a restoration of the fourteenth century; the old ones were probably more massive and had a lower point of attachment. Also, the wall of the side-aisles was removed under the groining and rectangular chapels were built between the buttresses, so that their walls are in a line with the extremities of the buttresses.

Laon Cathedral.—The present Cathedral of Laon was built in the last years of the twelfth century and the beginning of the thirteenth. It is remarkable for the great longitudinal extension not only of its three-aisied nave, but also of its square-ended choir (*pl. 29. fig. 5*). Its towers are square at the bottom, with buttresses at the angles, but above become octangular, while two-storey baldachin-like turrets are set in the upper angles of the square and soften the transition from square to octangular.

Slender octangular stone spires rise over the tower itself, as well as above the four turrets. Equally remarkable are the great stone figures of bulls which stand in the upper storeys of the angle-turrets and form the transition between the narrow octangular upper storey and the square baldachin-like lower storey.

Soissons Cathedral.—Toward the close of the twelfth century the Cathedral of Soissons was begun, and its apsidal southern transept was probably completed in that century, while choir and nave were built in the early part of the thirteenth. Nave and choir are three-aisled, and the latter has chapels between the buttresses. The chevet has five chapels opening into the aisle of the semicircular choir-apse.

Noyon Cathedral.—The nave of the Cathedral of Noyon has a broad and lofty main aisle, with narrow side-aisles, and galleries over them. Clustered pillars alternate with round columns, and are united by somewhat stilted pointed arches. Five shafts rise aloft from the shafted pillars in the nave, while three rise from the capitals of the side-aisles.¹ Above the arches a cornice runs between the shafts that carry the groining. In the two eastern bays this cornice runs around the shafts that rise from the intermediate pillars, and these shafts, like those of the choir, are girdled with several rings of mouldings. The galleries above the side-aisles open into the middle aisle by pointed arcades subdivided into two smaller pointed arches borne upon colonnettes. Above the galleries runs a passage with small columns joined by round arches. The clere-storey has in each bay two narrow round-arched windows side by side.

The vaults are not the original ones, but were probably built about 1298. The original vaults were hexapartite, as is proved by the entire arrangement; so that, of the five service-shafts of the principal piers, one served for the principal or cross-rib, two for the diagonal ribs, and two for the wall-ribs, while the three shafts of the intermediate pillars belonged to the intermediate rib and the wall-ribs, which latter are considerably stilted round arches.

Above the galleries of the side-aisles is a flat roof, and above this roof rise plain buttresses which are covered by a gable below the cornice. A broad set-off projects backward from the buttresses, and rises considerably above the springing of the vaulting of the side-aisles; against this rests a massive gable-topped flying-buttress of considerable depth. There is a gallery in front of the clere-storey windows, consisting in each bay of two small round arches on columns, enclosed under a larger round arch.

The Cathedral of Langres has a choir with semicircular apse and aisle, built in the second half of the twelfth century, and a nave with three aisles of the early part of the thirteenth century. This nave shows the influence of another school of architecture in the section of the pillars, the broad transverse ribs, and other features; but the vaulting is already entirely executed in oblong bays. Although the pillars are more massive than the round stems of the churches of the North of France, yet flying-

¹ Probably the writer intended to say "intermediate pillars."—Ed.

buttresses are employed to convey the thrust of the vaulting of the middle aisle to the buttress.

Notre Dame at Dijon.—The not very large Church of Notre Dame at Dijon was erected about 1220. The exterior appears rather massive, since all the weight and thrust are centred in the buttresses, whereas the interior exhibits a surpassing elegance and lightness, seeming more a fairy-fabric than one of stone. It is, in fact, an ingenious system of construction which required a gifted intelligence to arrange so as to give the interior such lightness.

Notre Dame, Paris.—The nave of Notre Dame at Paris (about 1218) has five aisles, like the choir (*pl.* 29, *figs.* 1, 2). Circular columns separate the centre from the side-aisles, and the clustered shafts of the groining start upon the capitals. The arches are pointed, and the broad archivolts have rectangular rebates with roll-mouldings on the edges. A cornice broken by the shafts, which have pedestals and bases where they rest on the caps of the columns, runs above the arcades. The gallery above the inner side-aisles has pointed arches subdivided into three smaller arches on colonnettes. The space above this had no triforium, but opened by round windows into the roof-space over the gallery. This had to give way to a later enlargement of the clere-story windows. The previous windows were simple lancet-headed ones without tracery. The vaulting of the centre aisle is hexapartite, each bay comprising two oblong bays. The wall-ribs, on account of the windows, as well as in order that they may rise as nearly as possible to the same level as the crown of the vault, are stilted upon small colonnettes resting upon the side-shafts, which rise from the intermediate columns, while on the principal columns they are set upon the shafts which also bear the diagonal ribs. The system of buttresses and flying-buttresses is alike in the main and intermediate pillars.

Externally, massive buttresses projected from the original wall of the side-aisles, receiving their thrust directly, while that of the vaulting of the middle aisle was transferred to them. Piers rise above the pillars which separate the inner and outer side-aisles, and these piers receive the flying-buttresses from the clere-storey and transmit the thrust to the buttresses by additional flying-buttresses. There are two series of flying-buttresses under one another. The lower series abuts against the springing of the cross-ribs; the upper rests against the middle aisle, a little under the cornice, and, besides the assistance which it lends to the lower series, serves to convey the water from the roof. The lower flying-buttress is brought under the roof of the vaulted gallery and is not visible, but the arch which abuts against it and conveys its thrust from the pillars between the aisles to the buttresses is in full sight. Arches under the roof of the outer aisle also contribute to the stability and bonding of the entire system. In the middle of the thirteenth century considerable alterations were made which gave the inside its present appearance.

At the end of the thirteenth and beginning of the fourteenth century



the walls of the side-aisles were removed and chapels built between the buttresses. The section of the nave (*pl.* 29, *fig.* 2) makes clear the system of buttresses. The ground-plan (*fig.* 1) shows the later alterations, particularly the chapels built between the buttresses. The design of the façade (*fig.* 3) is of great magnificence, though the upper parts of the towers are as yet unfinished. Although the greater number of the details must induce us to class the structure as Romanesque, yet the entire arrangement, the whole conception, is such that we see before us not only the inception of a new style, but also the ideal and the highest achievement of that style.

Church at Vezelay.—Almost equal in development, but smaller in its masses and more elegant in its entire effect than the nave of Notre Dame at Paris, is the choir of the church at Vezelay, begun in the first years of the thirteenth century. It has columns of a single stone, with pointed arches. Three shafts rise from each column; the cornice runs around them, and they are also girt with rings. The bay next to the apse has two arches between the stout columns, so arranged that they form a transition to the narrower axis of the polygonal apse. That the arches may have their full width and the lightest support possible, they are separated by two small columns placed one behind the other.

A triforium lighted the roof of the side-aisle, which was replaced by a vaulted gallery at a later date. The triforium had small pointed arches resting on small columns, each pair of arches embraced by a round arch; two of these round arches, with their pillars, correspond to one of the main arches. Over the pillar which separates each pair of these semi-circular arches a shaft rises from a corbel and receives an intermediate rib of the groining, and also the rib of the highly-pitched, round-arched wall-ribs that spring to the shafts over the main pillars. Thus the vaulting is so arranged that a hexapartite vault is erected over a single oblong compartment or bay of the choir. In the bay next to the chevet, which is subdivided below by the slender intermediate columns, a rib also rises from a colonnette which stands on a corbel. In the very narrow rectangle of the first half of this bay there is a quadripartite groined vault with diagonal ribs, but the vault of the second half of the bay forms part of the vaulting of the chevet. The clere-storey windows are pointed and of tolerable size; so that they fill almost the whole of the space beneath the external ribs of the vaulting. The exterior was originally without buttresses, but they appear to have been subsequently added.

German Transition to the Gothic.—By the close of the twelfth and at the beginning of the thirteenth century French chivalry not only had found a place in Germany, but also held sway there; and with it came the elements of French architecture. It did not crush the German ideal: it only refined it. The love for rich decoration, for elegant membering, for more definite characterization of the details, for a lighter poesy, and for a more worldly gayety as opposed to solemn strength were the acqui-

sitions. Naturally, it was first upon the Rhine, in the old centres of population, in the seats of the bishops, that an architecture developed poetical as chivalry itself. Thence it spread to Swabia, the home of the ruling emperors, and lastly to Austria, the seat of a prosperous and princely house and of rich and influential conventual establishments. This period may be called the late Romanesque or Transitional, since the entire period in which the German idea dominated is falsely called the Romanesque.

One of the elements taken from France was the pointed arch; a second, the membering of the pillars into angular portions bound up with detached shafts which are secured to the main pillars with projecting ring-shaped bond-stones. The capitals are broad and projecting and the ribs richly moulded. Besides the pointed arch, the trefoil is widely used. All the details are lighter; hexapartite vaulting expresses the greater lightness of the supported mass. Yet still the ancient ideal for the general plan of the church remains intact. The wall-masses yet retain their importance and furnish the abutment to the vaults, since buttresses are used only timidly and singly and are of slight projection.

At the close of the twelfth century the upper part of the choir of *Sta. Maria in Capitulo* at Cologne was rebuilt. The Church of the Apostles obtained its present form in 1219, having occupied a long time in its construction. The Church of *St. Martin le Grand* was rebuilt 1206-1211; the upper part of the nave and the narthex are of this date. In 1209 the foundation of the fanciful Church of *St. Quirin* at Neuss was laid, and the church is said to have been built in fourteen years.

In the first years of the thirteenth century the renovation of *St. Cunibert* at Cologne was undertaken; the high altar was consecrated in 1222, but it was not until 1247 that the final consecration took place. In 1220 the octagonal central tower of *St. Andrew* was built, and at the same time the narthex and other parts were added; in 1221 the conventual church of *Sion* was erected; 1227 saw the completion of the still-existing much-admired centre tower of *St. Gereon* (*pl.* 25, *fig.* 7), and in the same year a part of the conventual church of *Heisterbach* was consecrated. This church was not entirely finished until ten years later, and in the ruins of its choir one of the most expressive and poetical works of mediæval art has come down to us. To the same age belong the church at *Brauweiler*, that of *Gladbach*, the rebuilt choir of *Kaiserswerth*, and *St. Nicholas* at *Wipperfürth*. The nave of the minster at *Bonn* and the Abbey-church of *Werden* belong to this group.

To all the edifices on the Rhine, both large and small, from its source to its delta, some portions were added at this period; others were renewed, the enumeration of which would make an extensive catalogue. In two lateral valleys of this river yet stand structures which represent that period as characteristically as the group in and around Cologne, and are so unique, withal, that they must be considered as its most surpassing representatives. These are the Church of *Gelnhausen* (*pl.* 6) and the Cathedral



of Limburg, on the Lahn (*pl.* 25, *fig.* 4), built between 1213 and 1242. The exteriors of these churches retain completely the leading features of the churches of the older period, while the interior of the latter (*pl.* 24, *fig.* 3), though of rather small size, exhibits in the gallery and triforium forms entirely analogous to those French ones which we met with in Notre Dame at Paris, though the severe and massive construction shows how unwilling the Germans were to abandon their old system.

Cathedral of Bamberg.—A highly-important structure of this period is the Cathedral of Bamberg (*pl.* 25, *fig.* 5), which has double bays in the nave, while the eastern choir is sumptuously decorated and the western towers exhibit the highest realization of the richness of forms of the Romanesque—not, indeed, with the ancient solidity, but with an almost playful liveliness imported direct from France.

Not far from Bamberg, in Franconia, stands the Cistercian Church of Ebrach, the principal part of which was erected after the beginning of the thirteenth century, and which was consecrated in 1285. It still retains the system of double bays with square quadripartite vaulting in the centre aisle, exactly as in the earlier period, only diagonal ribs are present. The same system is retained in many buildings, as in the cathedrals of Naumburg and Münster and in the Cistercian Church of Riddagshausen, the choir of which has the same design as that of the Cistercian Church of Ebrach. In both the chancel has a square end, yet the aisles are carried round it; and around the aisle is a series of square chapels. The double bay is already superseded by the single one in the Church of St. Sebald at Nuremberg.

The Cathedral of Magdeburg, commenced in 1207, not only displays French details, but brings into Germany the French chevet, or polygonal apse with aisle and crown of chapels. Still, it retains the severity of the massive pillars and the German mouldings of the age. Through the long delay in the construction of the building, architecture developed more and more; so that parts of the structure cannot be called Romanesque, but rather Gothic (*pl.* 31, *fig.* 2).

Other structures of the early part of the thirteenth century are the west choir of the Cathedral of Mayence and the Cathedral of Paderborn, which latter exhibits a different arrangement; for the three aisles are of equal height. This system occurs in many churches in Westphalia and spread farther, so that from this time forward it begins to supersede the basilica system. In this class of church there is no clere-storey to light the middle aisle, but the pillars have no high walls to bear, and the side-thrust of the centre vault upon them is counterbalanced by that of the side-aisles; so that they can be made comparatively small and spaced wide apart.

Cloisters.—The highest ideal of this period was church-architecture, and monumental building is almost exclusively confined to it; hence the results of this architectural development readily found application in a class of secular structures. Convents often adjoined and were united with the


churches. These contained vaulted corridors, called cloisters, running round a square court, and various kinds of halls—some, as the chapter-house, devoted to common edification; others, as the refectories, to common recreation. Collegiate foundations were attached to the cathedrals, and also to the parish churches of the larger cities, and similar buildings occur near most large churches.

Convent of Maulbronn.—As an example we give the plan of the Convent of Maulbronn (*pl.* 26, *fig.* 1), in which, as in almost all others, a part of the structures belongs to a later date. The cloister (*fig.* 2) and the refectory (*fig.* 3) show the late Romanesque style developed in the most original manner, and exhibit its application to distinct yet similar purposes. A number of magnificent convents of this kind were erected in the beginning of the thirteenth century upon the middle and lower Rhine, but most of them have disappeared. Some fine examples of such buildings still exist in Austria. The cloisters at Heiligenkreuz, Zwettl, and Klosterneuburg are unsurpassed for poetical elegance.

Austria has also a great number of churches of this age, and thence proceeded a school which filled Hungary and Transylvania with edifices. We may mention the nave of the Franciscan church at Salzburg, the church at Lilienfeld (1202–1220), with its cloister and chapter-house, the collegiate Church of St. Michael at Wiener-Neustadt, and the ancient remains of St. Stephen at Vienna. Still others are the Church of Tischowitz and the original design of that at Trebitsch, both in Moravia. Among the Hungarian churches we find the Benedictine Abbey-church of Martinsberg, consecrated in 1222, the church at Lébeny, and the ruins of the churches at Tsámbék and Nagy-Károly, of the collegiate Church of St. Ják, and of the Cathedral of Carlsburg, in Transylvania.

The Dwelling-houses of this period seldom attained to monumental construction; even great palaces and castles which were built of wood have for the most part disappeared. A fine structure of the early Romanesque is the still-existing Landgrave's Palace on the Wartburg, which has recently been restored for modern dwellings and as a place of recreation. The imperial palace at Goslar has also recently been renovated. Gelnhausen has the ruins of the palace of the emperor Frederick Barbarossa, and Wimpfen those of a similar palace. Among the many castles whose ruins are found everywhere on summit and slope throughout Germany, and which mostly go back to this period, one of the most notable is Castle Trifels, in the Palatinate. Only from the close of this period have we city-dwellings left to us in sufficient number and completeness to enable us to recognize their system. Cologne and Treves have several dwellings of this age, but a part of them have been sacrificed for modern purposes. Two houses at Cologne dating from the beginning of the thirteenth century are represented in Figures 4 and 5.

Ornamentation.—Before we close the description of this period we must cast a glance over the development of ornamental detail. An echo of the classical may still be found, and in Figure 3 the Corinthian



capital may be recognized. As yet the shape of the capitals was not complicated, and, since the cubical form expressed better the power to carry great arches and massive vaults, the simple shape shown in Figure 7 (*pl.* 26) was widely used, or it was decorated with flat ornament which did not disguise its form (*figs.* 6, 9). The animal world plays a conspicuous part in the ornamentation of the period. The peculiarly imaginative and strongly conventional style of these animals points to an Oriental origin. Woven silks which exhibited in their patterns animal forms symmetrically arranged, turned backward and forward, and interlaced, were brought from the Orient in considerable abundance. The forms were partly based on primitive traditions. Figure 10 shows a capital with such interlaced animal figures. Just as the animal forms are interlaced regularly, so are ornaments drawn from the vegetable world similarly intertwined, and the frieze and abacus of the capitals, as well as the pattern of the shafts, show such symmetrical leaflike figures.

In France and Italy the capitals bore not only figures of animals, but also entire historical scenes (*pl.* 28, *figs.* 9, 10). This method of decoration was seldom employed in Germany, where the animals usually carved were the lion, the eagle, and the dragon. With the development of art in the twelfth century more lightness was attained in all forms, and the capitals particularly were often adorned with elegant interlaced ornaments. For the numerous examples extant we can find but little room (*pl.* 26, *figs.* 11-13, 16).

It is to be particularly remarked that it is not the desire to make an exact copy of nature that gives the motive for this foliated ornament, but rather that the precise symmetry of the spacing of the individual leaves necessitates placing between them bandlike interlacings almost geometrically formed from separate vegetable *motifs*, and in most cases the ends of the twists are developed into leaflike forms.

Column Base and Cornice.—The base of the column formed a new object of adornment. Where the lower roll-moulding sits on the square base, bosses are introduced to make a harmonious union; leaves are also made to spring from the base and twist themselves around the roll, or they arise from the roll and descend to the square base, their ends perhaps rolled together, or again with a twist rising over the roll (*figs.* 19-23). A peculiar kind of ornament was developed in the cornices, where a series of small arches form a frieze (*figs.* 17, 18).

Development of Forms.—With the beginning of the thirteenth century nature was approached more nearly in France, yet strictly symmetrical forms were still used, and a charming contrast was effected by the alternation of the convex outer side with the concave inner side of the leaves (*pl.* 29, *fig.* 4). Particularly characteristic are those narrow, hooklike leaves which are rolled into a knob at the end and stand out boldly and freely, almost detached from the bell-shaped cone of the capital. These leaves are not confined to the capitals, but are used in other parts of the building. They stand in rows under the

cornice, they form a line along the sloping angles of the spires (crockets), buttresses, etc., and occur even on perpendicular portions.

Both the last-named kinds of ornament were used in Germany together with other *motifs*. Figure 15 (*pl.* 26) gives one of the most elegant examples of the application of these narrow, hooklike leaves rolled together at the tip, while Figure 14 shows an approach to natural forms. If we compare these with Figures 6 and 10, we become aware of a difference so wide that we can consider them as belonging to the same style only because we find an unbroken series of examples from one extreme to the other. The spirit is, indeed, so different that we have already reached another style; in such forms as those shown in Figures 12-16 we may as truly see the commencement of the Gothic as the close of the Romanesque. The new style has developed so gradually out of the one preceding it that it is hard to fix the dividing-line.¹

V. GOTHIC ARCHITECTURE.

1. FRENCH GOTHIC, THIRTEENTH AND FOURTEENTH CENTURIES.

When we compare the two styles whose transition-point we have now reached, and when we consider their characteristic peculiarities, we find that both to a certain extent exemplify nationality rather than time. The technical appellations themselves have indeed come down to us from a period when science did not concern itself so thoroughly with the characteristics of style; therefore the denominations, though we must here retain them, stand upon a false foundation. The only appellation with a national name that will apply to the styles of the foregoing period would not be Romanesque, but Germanic, since, though not altogether confined to Germany, it was only there that it attained to its fullest harmony and importance, only there that it embodied the ideal which was principally entertained by the Germans.

But that taste which in France brought about so notable a modification of the Romanesque that that style could not there attain to its full harmony ought, if it is to have a national name, to be called the French Style. The Romanesque in France was but a prelude to the development of the Gothic—a style with which the Goths had nothing to do. Not that France alone took part in the development of the Gothic: we have already seen what essential elements were derived from Germany. Nor should it be called French because its further development was confined to France, nor because other nations took it exactly as France developed it and preserved it in its French purity. Even as the Romanesque extended its sway, with national modifications,

¹ It is always hard to fix such a line, since neither in nature nor in art does a rigid boundary exist; yet if our author would consider all such forms as those shown on Plate 26 (*figs.* 12-16) and Plate 29 (*fig.* 4) as belonging to the Gothic style, even though they were used at the end of the twelfth century, he would be nearer to exactness.—ED.

throughout the whole of the Christian West, and in every land developed a different local school, so also did the Gothic, which we have designated as French because France inaugurated it and first used the existing elements until the new style was completely developed.

Development of the Gothic.—We have indeed to ask ourselves if we were really justifiable in assigning the French monuments mentioned on p. 167 to the Romanesque style. But it is only in France that the course of development from Romanesque to Gothic can be traced in such uninterrupted succession that there is not a link broken, while the alterations which in Germany took place in taste and in detail, together with the modification of the Romanesque which resulted therefrom, are evidently the effect of motives brought over from France; and if we wish to trace German Romanesque to its close, we must first follow up that evolution of French architecture which influenced it. In order to trace the development of the Gothic style, we must commence where (on page 181) we left the development of French architecture. We there find that church-architecture, which also throughout the Gothic period was the climax of architectural achievement, may be considered as a constructive scaffold by which the entire load, as well as all constructive functions, was relegated to a system of pillars; so that the actual walls subserved no purpose save that of enclosure. Naturally, when this system reached its full artistic development, the walls, in so far as they were not really needed as protecting enclosures, might be dispensed with; and it is in this direction that development proceeds.

Effect of the Innovation.—Everywhere over the already-extensive France of that period there reigned a *furor* for building, centred in the construction of great cathedrals, which rose in all quarters. In some places the effort was made to complete what had been begun at the close of the twelfth century, while in others structures were commenced upon so grand a scale that they were not finished until the following generations, or even until after hundreds of years. The long duration of the construction of works so magnificently planned precluded their completion exactly according to the original design. Changes in taste brought about a further development of style before the edifices were completed, and modifications in the plan were the necessary consequence; so that scarcely one of the great edifices exhibits in its entirety the character of a definite period, while most of them, in the various portions which adjoin one another, furnish an image of the development of art during the course of two or three centuries. This length of time, with the consequent change of style, explains the presence of so much that seems unmotivated and inharmonious in the *ensemble*, though the susceptible eye is enraptured with the beauty, the harmony, and the artistic completeness both of individual parts and of those connected portions which belong to the same period.

Through the great energy displayed the number of edifices erected is enormously large, and so many of them now exist that volumes would be



needed for their description; we can, therefore, only find space to follow the development of the style in a few of its grand monuments—namely, the great cathedrals—and along with them to describe a few smaller structures which, since they were completed within a short space of time, are more characteristic than the larger ones, and give a more harmoniously complete image of the architecture of their period.

St. Étienne at Auxerre.—The choir of the Cathedral of St. Étienne at Auxerre was rebuilt in 1215–1230. The well-preserved early Romanesque crypt, with its semicircular arch, surrounding aisle, and square chapel at the extremity, determined the ground-plan; so that, with the exception of the radiating crown of chapels which in the French works before described was shown to be characteristic, it is the product of a definite external cause. Extreme elegance, exemplified in the employment of entirely detached shafts of extraordinary slenderness, characterizes this structure, while at the same time a certain tenuity of the members makes evident the endeavor to obtain lightness of appearance not only by construction, but also by masking the supporting materials and using more delicate mouldings.

The ornamentation which was called in to aid in giving an appearance of still greater lightness to the supporting members, as in the case of the slender columns which bore the springing of the vaults and separated the square chapels from the surrounding aisles, abandoned the bosses and knobs which adorned so delicately the blocks of the capitals, the cornices, and the vertical mouldings in the earlier monuments, and in their place substituted copies of natural foliage. The idea of supporting the springing of the vaulting by great horizontal corbels bedded in the outer buttresses, with their anterior angles supported only by a slender monolithic shaft upon the interior, had led to brilliant results in Notre Dame at Dijon, and throughout a long period it became more and more prominent. In St. Étienne at Auxerre it is employed in a most thorough manner. The flying-buttresses of the church at Auxerre are without that massive masonry above the arches to be found in earlier examples, but have instead a series of small columns united by arches and supporting a stone channel for the conveyance of the water from the roof of the central aisle.

Church at Rieux.—The same constructive idea is apparent in the small church at Rieux, near Montmirail, in Champagne; yet here—partly in consequence of local traditions, and partly through the nature of the building-material—it is not carried out so consistently as in the previously-named church of the same period. In the church at Rieux the anterior supports of the springing of the vault consist of clustered columns which have a proportionally larger mass than the internal supports of the previously-mentioned church. In the church at Rieux there are between each pair of buttresses two narrow pointed windows with a round window above them, the whole, through the extreme reduction of the masses separating them, forming one great window, which fills up the entire

space below the exterior ribs of the vaulting. This combination of three windows in one is the commencement of what is known as *tracery*, which plays so great a part in the development of the Gothic style. In the choir of the church at Auxerre the individual importance of each opening is more apparent.

The Cathedral of Notre Dame at Coutances was also rebuilt at the commencement of the thirteenth century. It has a three-aisled nave, a one-aisled transept with massive pillars at the intersection, and a five-aisled choir with a surrounding of chapels. The massiveness of the pillars at the intersection makes it probable that a central tower was projected, but never completed. The west façade has two massive towers with stone spires, and displays three portals, the lateral ones leading through the towers into the side-aisles. The two great porches which adjoin the towers on the northern and southern sides of the cathedral are very peculiar.

Notre Dame at Le Mans.—About 1220 the old choir of the Cathedral of Notre Dame at Le Mans was demolished and the present beautiful choir added to the existing Romanesque nave. Two aisles, the inner one the higher, extended around the choir, and the apse and chevet reach their fullest development, since the chapels are large and project so far that they stand free from one another. The charming details, in which strength and delicacy, order and a fanciful abandon, are united, render this choir one of the most perfect works of the Gothic period.

Cathedral at Bourges.—At about the same time, or perhaps a few years later, the choir of the Cathedral of Bourges was built. This exhibits two aisles with a series of chapels, small but of original design. The inner aisle is also in this case higher than the outer, and has a triforium, as in the centre aisle, occupying the height of the lean-to roof of the lower outer aisle. The arrangement of the buttresses is heavy. Three flying-buttresses from the wall of the central aisle are concentrated upon a single buttress in that of the inner side-aisle, and from this three flying-buttresses placed one over another spring to the pinnacle, which rises over the wall of the outer aisle to almost double its height. Beautiful though this magnificent arrangement makes the interior, and though grand is the high-arching arcade of the middle aisle, with its slender columns and its perspectives through the two side-aisles, yet the complicated system of flying-buttresses makes the exterior heavy and unsatisfactory.

Cathedral of Rouen.—The ground-plan of the Cathedral of Rouen is of the same period, though a few of the older portions of the choir have been retained. Normandy had always its peculiar local school, and thus the ground-plan of this church displays many peculiarities. Besides the three-aisled principal choir, two lateral choirs open into the three-aisled transept, while around the principal choir only two of the Romanesque chapels are preserved, the place of the central three being occupied by a Gothic chapel of several bays. The arrangement of a gallery under the arcade of the nave is especially singular. The openings leading to this

are pierced at about the half of the height of the arches, on the upper surface of which the broad gallery is carried, and since it was essential not to pierce the pillars, the separate parts of this gallery are connected with one another by portions which are carried around the pillars upon elegantly-constructed corbels projecting from them into the side-aisles. Many parts of the building belong to a late period.

Cathedral of Rheims.—The old Cathedral of Rheims was completely destroyed by a conflagration in 1211, and in 1212 the foundation of a new structure was laid, which was placed under the direction of Robert de Coucy. As in all these great edifices, the construction lasted through so long a series of years that manifold modifications were made in the plans before the edifice was finished as we now see it. The nave and transept have three aisles; the choir has five. The chevet has five radiating chapels, which, according to the manner of the age, are semicircular instead of polygonal, and are tolerably massive in structure. The pillars are circular, with four circular attached shafts at equidistant points. A capital crowns the whole and supports the arcade on two sides, the vaulting of the side-aisles on a third, and on the fourth a cluster of five shafts, which ascend the wall of the middle aisle (*pl.* 29, *fig.* 8). The system of buttresses belongs to a later period. The façade is arranged like that of the cathedral at Paris, and has three very richly embellished portals, which, decorated with conventional foliage, terminated by pointed gables, and adorned with a multitude of statues, form a rich frontal to the body of the building. The upper portion of the towers is less harmonious; it was probably intended to be terminated with spires similar to those shown in Figure 3.

The Cathedral of Rheims shows also gradations in architectural development that were brought about during the long course of its erection, and to which Robert de Coucy himself probably contributed very little. It may be noticed that Robert brought the choir to the height of the chapels and erected the side-aisles of the nave, with the exception of the last bay, which he scarcely commenced. He probably left the work about 1230; the erection of the principal choir may have been continued about 1240, and the western bay of the nave begun about the same time. The façade was probably completed, much as we now see it, about the opening of the fourteenth century, but much was added to it in the fifteenth.

Cathedral of Amiens.—The old Cathedral of Amiens was destroyed by fire in 1218, and in 1220 the present building was begun under Robert de Luzarches. The nave was first taken in hand. Robert could only have laid the foundations, for a few years later we find the architect Thomas de Cormont at work. He raised the nave rapidly, and it may have been finished by his son. In 1246 it stood completed, together with the stone central tower and the chapels of the choir. These were damaged in 1258 by a fire, which caused a delay in the works; so that the choir was not completed until 1288. The façade, which was without doubt altered

many times and was still worked upon in the fifteenth century, has not the harmony expressed by those parts which were erected in the middle of the thirteenth century. The section of the nave (*pl.* 29, *fig.* 9) shows a simple system of abutments imposing by its mass. In 1527 lightning destroyed the stone central tower, and in its place was erected the elegant spire of wood and lead which is still the delight of the lovers of art.

Architectural Activity.—The most earnest school of architecture was occupied in the construction of great cathedrals, but activity was manifested in an extensive series of works. Not merely smaller churches, but the royal palaces at Paris, a series of royal palaces and castles in the country, convents for the peaceful life of the monks, the fortification of cities, the residences of citizens, and public buildings, gave opportunities for the execution of monumental architecture.

Convents.—It is true that many structures for secular purposes were still built of wood; yet we must now mention the majestic cloisters of Fontifroid, Laon, Noyon, Elne, St. Lizier, Sémur-en-Auxois, St. Jean des Vignes, Soissons, Toul, Langres, Rouen, etc., as well as the refectories of St. Martin des Champs, of the Abbey of Ste. Geneviève, and of St. Germain des Près at Paris, as brilliant examples of the convents of the period.

Private and Public Works.—As appropriate illustrations of the architectural splendor which pervaded all the provinces, we may instance the dwellings at Cordes, St. Antonin, St. Yrieux, Montpazier, Toulouse, Caussade, etc.; the hospitals at Chartres and Angers; the cities of the thirteenth century, laid out with great unity of plan; the bridge over the Charente at Saintes; the Calender-bridge at Cahors (1251); bridges at Rouen, Lyons, etc.; episcopal palaces at Paris, Rheims, Meaux, Soissons, Rouen, Laon, Narbonne, Sens, etc.; and the castles at Coucy and Montargis.

Sainte Chapelle.—Of surpassing importance was the royal palace at Paris, and particularly its chapel, Sainte Chapelle, the work of Pierre de Montereau, and one of the most complete works of the Gothic style; it is now restored to its pristine brilliancy. It was erected 1242–1247, and consists of a basement-storey of no great height and a lofty upper chapel, the latter a single hall consisting of four oblong groined bays and a polygonal apse. There are no walls. Traceried windows stretch from buttress to buttress, and the parapet below them is decorated with an arcade. Every mass apparent in the interior is lost in the richest detail, and the whole is gilded and adorned with color which is in full harmony with the stained glass of the grand windows; so that the interior produces the richest imaginable impression and seems rather the work of a goldsmith than that of a stone-mason. It is a reliquary upon a grand scale, by which the goldsmiths of the period excite our wonder, for the king had it built to contain relics which he esteemed as his greatest treasures—namely, Christ's crown of thorns and a piece of the true cross. Pierre de Montereau built a similar chapel in the Abbey of St. Germain

des Près. The castle-chapel of St. Germain-en-Laye was built some years before that at Paris, and that at the Castle of Vincennes a few years after it.

The Cathedral of Tours was built about the middle of the thirteenth century, and copied the arrangement of the great cathedrals with somewhat smaller dimensions. Notwithstanding its smallness, it was not entirely completed, and the façade belongs to the sixteenth century. The Cathedral of Troyes is also an example of the normal arrangement of French churches. It has a five-aisled nave intersected by a transept of one aisle and continued by a five-aisled choir to a wreath of chapels ranged round the polygonal end of the choir and its aisle. The nave was erected in the fourteenth century; the west front, in the fifteenth.

Conventual Buildings.—A highly peculiar group of buildings was erected on Mont St. Michel. There rises on a cliff by the seashore a group of edifices—half-castle, half-convent, or properly both together—dominated by a great cathedral-like church which crowns the summit of the rock. The erection was commenced early in the thirteenth century, and was completed in 1260. Every day the sea flows over the entire sandy circuit of the rock, which seems to have been destined by nature for one of the most important points in the fortification of the coast, but which bore for many centuries a convent of the Benedictine order, to which King Philip Augustus contributed the means to construct the buildings not only for the comfort of the monks, but also for the defence of this important point. The church, almost Romanesque, belongs to the commencement of the thirteenth century; the secular structure, to the course of the same century. The whole displays the realization of that ideal which the author of "Parzival" describes as *Schloss Montsalvatsch*.

The Church of St. Denis, which plays so great a part in the architectural development of France, was again rebuilt in 1240, and the works may have been finished about 1260. The arrangement corresponds to that of the great French cathedrals.

The Cathedral of Beauvais, whose construction belongs to the same period, is but a fragment, since only part of the five-aisled choir next to the chevet, and the eastern side-aisle are completed. The foundation was laid in 1225, but no part of the existing structure can be older than 1240. In 1272 the building was finished much as we now find it; in the sixteenth century its continuation was proposed, but little was done. Figure 10 (*pl.* 29) gives a section of the chevet, and shows to what lightness and slenderness and to what a degree of formal elegance the system—which originated at the most forty years earlier, in the nave of Notre Dame at Paris—had in that comparatively short space of time been developed. It is, in fact, of the greatest interest to compare the four systems shown on Plate 29, to which must be added that of the Cathedral of Cologne, represented on Plate 31 (*fig.* 6). It has gone through a remarkable evolution. The upward aspiration, the effort toward the infinite, has brought the edifice to the most extreme proportion of slenderness; but the master who

in the beginning of the thirteenth century had to struggle both with his construction and with his forms now developed the whole as a strong and logical entity out of the internal requirements.

Improvement in Forms.—About the middle of the thirteenth century the rich experience gained rapidly from the superintendence of so many cathedrals gave to the masters a stock of knowledge which they now exploited and followed. The spirit of this system influenced other departments, and so there was developed upon the given basis a system of forms which above all aimed to animate the dead masses. Thus the system of the Church of Beauvais shows the aspiring buttresses no longer as heavy masses—though it is just in these that their constructive significance lies—but by means of elegant details they are made to appear like turrets, which merely from artistic motives are formed to please the eye.

The Cathedral of Bayeux, some older portions being retained, was renewed in the second half of the thirteenth century. Though smaller than the edifices before mentioned, it still has its chevet. The thirteenth century did not see its completion: work was continued upon it until the sixteenth century. The parts built after the Middle Ages contribute to disturb the unity and harmony of the structure.

Friars' Churches.—About the middle of the thirteenth century the number of convents multiplied, while the Dominican and Franciscan orders erected their assembly-rooms in the middle of the cities. Paris has preserved in the Convent of the Jacobins a remarkable monument which St. Louis built for them. The church was a great rectangular hall divided into two aisles by a row of pillars, without chapels, without polygonal choir, and without lower side-aisles, the east and west ends unbroken. The refectory, built in 1256, had exactly the same plan, but was smaller than the church.

The preaching orders had in their church-buildings a purpose different from that exhibited in former churches. Hitherto the church was the place where God was worshipped, and where with great solemnity the bloodless offering could be placed before Him; where perpetually from the various altars individuals might through the mass approach personally near to Him; where a numerous priesthood maintained by rich endowments could intone their hymns and psalms in honor of the Most High; and where processions singing and praying could move with the display of a magnificent ceremonial. Hence the great extent of the sanctuary, where, besides the high altar at which a bishop displayed the host, stood the stalls for the clergy; hence the many chapels with their altars for individual masses; hence the great apsidal aisles of the choir. The nave was of secondary importance: the sacrifice could there be offered, and there could resound the sacred songs chanted by the priests, though the people took no part. But when by participation of the latter the dignity of the ceremonial was increased, then it was that they could present in the spacious nave their offerings of praise and co-operate in the sacred ceremony. The aim of the structure was exclusively ideal; hence the

inspiration which the artist drew incited him to ideal achievements. The Dominicans gave little room to this ideal in their churches, which were primarily erected to accommodate the people who congregated to listen to their teachings. For this reason their churches are scarcely more than great assembly-rooms.

The Church of the Jacobins at Agen was built about the middle of the thirteenth century; it also had two aisles. That at Toulouse descends from the second half of the century, and its two aisles are terminated in a beautiful and original manner by a wreath of chapels around the choir, forming a semicircle about the last pillar. The circlet of chapels is not of the same date as are the rest, but is a work of the fourteenth and fifteenth centuries.

As has been stated (p. 187), few buildings were erected complete at once. All churches were foundations which proceeded from the donations of believers; to these, from king to beggar, all contributed according to their means. In the beginning of the thirteenth century these sources seemed inexhaustible, though they did not always flow equally. Construction was constantly prosecuted with more or less energy; yet in the course of the century some of these sources failed, while others flowed in varying volumes, and consequently in many instances work was suspended until the time when it could be resumed.

Structural Modifications.—The progress which Architecture made, the ever-increasing richness of forms, was also the cause of the demolition of many structures which had been erected only a few decades. Since they no longer pleased the eye sufficiently, the recently-constructed portions were unhesitatingly demolished, to give place to more splendid substitutes. Individuals and families also desired separate, endowed compartments, particularly chapels, in which they could offer up their devotions, in which both joyous and solemn events could be celebrated, and in which the members of the family could find their last resting-place. Such single parts were added to the great buildings, even though they formed no portion of the original plan. The enclosure of the side-aisles was broken through, and chapels were built between the buttresses of both nave and choir wherever there was room.

Cathedral at Paris.—Especially instructive is the cathedral at Paris, to which, although here there was no lack of means—or perhaps because the means were not lacking—additions were constantly made. About 1260 important works were there undertaken. The two transept fronts were torn down in 1257, and in the course of several years were rebuilt with greater splendor. The chapels of the choir were commenced about 1206, and great windows in the triforium, decorated externally with gables, together with richly-ornamented pinnacles, adapted the solemn architecture of the choir to the artistic taste of the day.

Cathedral of Sens.—But other edifices were badly executed, either because they were too hastily built or because the insufficient means were in no proportion to the magnificence of the structures, and it was soon

necessary to make thorough repairs, or even to rebuild separate parts. Among such is the Cathedral of Séez, the nave of which was built in the beginning of the thirteenth century and was renovated in its upper portion fifty or sixty years later, while the choir, built about 1230, was taken down about 1260 and rebuilt, only the middle chapel of the chevet being allowed to remain. Early in the fourteenth century, notwithstanding the extreme lightness and the insignificant dimensions of the masses, a strengthening of the choir-buttresses was necessitated by the insufficiency of the foundations. Even this strengthening—probably because the foundations were not secure—availed little, and rift after rift appeared, until at last, in the commencement of the present century, the vaulting fell in. The façade, with its two magnificent towers, was repaired in the fourteenth and fifteenth centuries.

At Clermont, in Auvergne, at Limoges, and at Narbonne were built three great cathedrals which are so exactly alike that they appear to be the work of the same architect. The school had become so established, so definite were its rules and so familiar its methods, that as men built cathedrals they became masters. The Cathedral of Clermont was commenced in 1268; that of Narbonne, in 1272. The choir of Clermont was completed about the close of the thirteenth century; some bays of the nave were erected in the course of the fourteenth, and with the continuation of the structure the old Romanesque church, around which the new one was built, was demolished. But the west front still remains uncompleted. At Limoges the construction was continued in the fifteenth and sixteenth centuries, and yet the nave was not entirely finished. At Narbonne the choir alone reached completion between 1272 and 1330.

Influential as were the French Gothic schools in all parts of what is now France, they could not entirely overpower local traditions in the general plan of the buildings, and it was only in details that construction and forms were adapted to the new system. Thus, even in the Romanesque period, a certain arrangement had gained importance in the South—that of a single spacious vaulted nave supported on both sides by buttresses which were enclosed within the structure. During the reign of St. Louis two churches were built at Carcassonne according to this system. The chapels reach only to half the height; so that the nave obtains direct lighting through large windows above them. Other churches in which the arrangement is similar are that at Monpezat, built at the end of the thirteenth century, and the cathedral at Alby, in the fourteenth century.

The Cathedral at Alby has a single spacious nave about 20 metres (65½ feet) wide, with chapels on each side, between the buttresses. The nave obtains no direct light above the chapels, of which there are two series, an upper and a lower. The eastern end is a semi-decagon, adjoining which are polygonal chapels between buttresses. The exterior of this church is widely different from that of the cathedrals of Northern France: it is a veritable fortress. From immense wall-masses with comparatively small windows project shallow semicircular buttresses like flanking-towers,

while at the western extremity a tower which might as well be the keep of a castle as the bell-tower of a Gothic cathedral rises defiantly above the edifice.

Carcassonne Cathedral.—Bishop Peter de Rochefort erected in the beginning of the fourteenth century a Gothic transept with an eastern side-aisle and square chapels, similar to the German Cistercian churches before mentioned, and also a polygonal apse without surrounding aisles or chapels, at the eastern end of the ancient Romanesque Cathedral of Carcassonne. In these additions the changed tastes of the period may be traced without taking into account the increase in the dimensions of the structure. Many *motifs* of the still-existing Romanesque portion are repeated in the newer Gothic part, evidently without any intention to imitate; and thus there results a certain harmony between the older and the newer portions, although the latter attain the most extreme elegance of form. Particularly charming is the tracery of the screens which separate the chapels from one another. The mouldings of the pillars at the intersection of the nave and transepts have a certain Romanesque severity; furthermore, the transept is separated from the adjacent side-aisle by plain circular columns. The mouldings, so far as Romanesque reminiscences are not uppermost, are sharp and meagre. The circular pillars are continued above their capitals, and the mouldings of the arches merge into the round shaft. The mouldings of the small columns which form the front of the screens between the chapels are for the most part pear-shaped rolls. Thus the antique idea of the column which we find expressed in the round form of the shafts has been abandoned, and the pillar is treated as a unit the moulding of which has the purely-decorative purpose of diminishing its apparent size. These mouldings, having the same profile as the ribs of the vaulting, render still more manifest the unity of forms, which is continued from the ground to the summit of the groining.

We have already found occasion to indicate in a work of the thirteenth century—the Church of Notre Dame at Dijon—that by means of skilful construction all massiveness is removed from the interior and all the constructive functions are transferred to the buttresses on the exterior. In Carcassonne Cathedral the extreme development of this system is demonstrated, inasmuch as the entire design here aids in divesting of its constructive character such massiveness as still remains, and in building up entirely an ideal world of forms. Ideal still is the whole system. The forms are noble, pure, and appropriate, the tenuity which here and there makes itself felt is not disturbing, but the inward significance of the forms which a hundred years earlier were so clearly and sharply defined, and which gave completion to the works of the first half of the thirteenth century, is no longer contained in them.

The masters established for the school an ideal whose principle of beauty was artistic, and each new master who enjoyed some authority added new forms which found their justification in their harmony. Regarding construction, the idea was to diminish the actual masses as much

as possible, since these masses were to disappear entirely by subdivision into mouldings. The eye was no longer to behold a skilfully-constructed stone edifice, but a system of forms which by correct geometrical proportions is blended into harmonious unity like a diapason.

St. Ouen.—A great northern church in which a similar development is displayed, but whose leading ideas belong to the old French system, is the Church of St. Ouen at Rouen. The arrangement is that of a nave with three aisles, a transept with side-aisles on the western side, a choir with three aisles and chapels on each side between the buttresses, a polygonal apse, and a chevet of five chapels. The west front has two towers. The diagonal position of these towers is peculiar. A slender elegance characterizes the details, and all parts are clothed with a rich display of forms.

In general, the fourteenth century did not produce that wealth of architectural monuments which distinguished the thirteenth. The works of the thirteenth sufficed for the needs of the following centuries, and only gave them the opportunity here and there to continue what was commenced, to add chapels, and, above all, to devote themselves to the decoration of the churches with altars, lecterns, and pulpits. Many cloisters—among them those of the Cathedral of Bordeaux and of the Abbey of Mont St. Michel—were completed in the fourteenth century. Finally we have a great series of secular structures—dwellings, castles, and palaces—which had their origin in this century. Chief among these are the two palaces of the Louvre and the Hôtel St. Paul, built at Paris by Charles V.

Palaces: The Louvre.—Philip Augustus had in 1204 erected the Louvre as a strong castle in front of the walls of the city. St. Louis prepared it for habitation, but Charles, with his architect Raimond du Temple, entirely rebuilt it. Of this new structure a magnificent staircase formed the part which was most admired, as until then stairs had been regarded simply as a means of ascent, and not as a part calling for a grand architectonic expression.

The Hôtel St. Paul was chiefly destined for grand festivities. The principal room was the great banqueting-hall, called the Salle Charlemagne, and besides this there were several courts—among them, one for tournaments—extensive gardens, and a menagerie. Like the Louvre, the structure was destroyed in the sixteenth century.

The Papal Palace at Avignon, built in the fourteenth century and for the most part still in existence, rivalled these royal palaces. Benedict XII. built the northern part (1336); Clement VII., the southern part. Innocent VI. finished the structures of his predecessors, together with the upper chapels, and Urban V. (1362–1370) had the principal court hewn out of the rock and erected the eastern wing. The structure had a number of towers and was surrounded by outworks, so that it formed a perfect fortress; but in its interior it contained splendid dwelling-apartments and state-rooms. The principal entrance was on the western side, and on the south was the grand staircase, consisting

of straight flights and landings. The chapel, a lofty vaulted hall about 50 metres (164 feet) in length, adjoins the staircase. The great banquet-hall was in the northern wing, and all the halls were richly decorated with wall-paintings and other adornments.

The Château of Pierrefonds, near Compiègne, at once a strong castle and a comfortable habitation, belongs to the fourteenth century. Of ancient origin, it was rebuilt in 1390. It forms a somewhat irregular rectangle, with round towers at the angles and semicircular ones in the centre of each side; it is surrounded by a ditch and encloses a court. Living-rooms, banqueting-halls, and structures for defence and for service form an exceedingly picturesque whole. The smaller but equally picturesque Château de Sully, on the Loire, is of the same period.

2. ENGLISH GOTHIC, THIRTEENTH TO SIXTEENTH CENTURY.

As may be imagined, the great energy displayed in an architectural direction in France at the close of the twelfth and the commencement of the thirteenth century drew the attention of other lands to the progress made. We have already noted (p. 181) the influence which spread from France to Germany at this era. England could not escape this influence, and the less so since the chivalric Normans brought with them to England a part of that spirit which has been an inciting factor in the development of French culture, and indirectly of French architecture.

The architecture of the previous period was distinguished, as compared with the German, by a wealth of surface-ornament. Not only are the arches richly moulded, but the mouldings themselves are also enriched. Chevron or zigzag ornaments give to the arches which they follow a somewhat fantastic peculiarity. Meandering and undulating members alternate with the predominating zigzag. Detached ornament runs around the roll-mouldings. The surfaces are decorated with scale-like or checkered patterns (diapering), and larger wall-surfaces with a rich array of arcades in relief. To display still greater richness, the columns of these blind arcades are placed together so closely that they cover the wall almost like tapestry—an impression which is still further increased by the intersection of the arches, which spring from alternate columns.

The entire effect of this animated architecture allows the working of Oriental fantasy to appear more comprehensively than in the edifices of France or of Germany. Not that a direct transference of an Oriental set of forms had taken place—such a thing could scarcely be proved—but the taste for the fantastic was encouraged in a high degree by travels in foreign countries and by glimpses of Oriental edifices. The Sicilian possessions of the Normans, where Arabian culture ruled, must have been an inciting cause. A strong affinity to Arabian art finds expression in the fact that the entire wealth and imaginativeness of the English architecture are purely decorative and have not been worked out of a more highly-organized constructive system.

Early English Gothic: Canterbury Cathedral.—The superiority of

a system of construction which had developed in France must have become known early in England, since even in 1174 we find that when a conflagration had reduced Canterbury Cathedral to ashes a French architect, William of Sens, was called to superintend the reconstruction, which, according to a contemporary account, commenced with the transept; then the choir, with its side-aisles, was added; then a second transept; and then, on account of an existing crypt, the choir was drawn into a narrower width and terminated by a semicircular apse with an aisle around it. To this was added a great circular chapel, and also in the course of time various other structures. To the original plan belong two towers at the western angles of the older transept, and two semicircular apses on the eastern side of each wing of the transept. The exterior of this older portion has a completely Romanesque character; the construction of it may have continued into the thirteenth century. Its interior is entirely in accordance with the French system as it had developed at the close of the twelfth and the beginning of the thirteenth century, and particularly recalls the cathedral at Sens. In 1179, William of Sens fell sick and left the work to an Englishman, also named William, who continued it in the master's spirit. The great longitudinal extension of the choir may be cited as a specifically English feature.

Temple Church at London.—A similar mingling of Romanesque and Gothic elements is shown in the Temple Church at London, begun by the erection of a circular church in imitation of that of the Holy Sepulchre at Jerusalem, and consecrated in 1185. At the beginning of the thirteenth century a choir with three aisles, of equal height, was added, and was completed in 1240.

By the commencement of the thirteenth century the French principles of construction had made themselves completely at home in England. The plan followed that of the earlier period, always with three aisles instead of five, with a square-ended choir surpassing the nave in extent, and with a large chapel continued in a straight line beyond the choir. Two transepts, with side-aisles on the eastern side, intersected the longitudinal axis and projected far beyond the face of the side-aisles of the nave and choir. Over the intersection rose a grand central tower greatly surpassing the towers upon the west front.

Worcester Cathedral.—The choir of Worcester Cathedral was consecrated in 1218, and shows the peculiarities of early English Gothic in all their fulness.

Salisbury Cathedral furnishes a brilliant example of an arrangement such as is described above; its magnificent choir was built 1220–1258, and the nave and west front immediately after, while the massive central tower, with its lofty stone spire, was probably erected not very long afterward.¹ The windows of the side and central aisles are as yet narrow, high, and arranged in groups of two or three, which are not united by an embracing

¹ Lady Chapel, choir, transepts, and nave were built between 1220 and 1258; the tower and spire, between 1290 and 1320; the west front, at the beginning of the fourteenth century.—ED.

arch except in the transepts, where the area between the arch and the lancet windows is pierced by quatrefoils. The French system is exemplified more markedly in the extreme lightness of the pillars between the nave and its side-aisles. In order that each part may exhibit its usefulness, these pillars consist of groups of detached and extremely slender shafts of the hardest stone, which are united only by a moulded bond-stone at half their height and by the capital. As not one of these shafts is continued up the face of the clere-storey wall, it might be inferred that when the structure was commenced no vaulting was contemplated in the centre aisle. But the great projection of the buttresses of the side-aisles proves that they were intended to take the burden from the pillars.

The triforium has a low-pitched arch of a span equal to that of the main arches below; beneath this arch are two other pointed arches, each of which embraces two smaller ones resting on an intermediate column. All these arches rest on short columns with bases and capitals. The whole forms an interesting transition from the Romanesque system to the later Gothic tracery, and is in France to be found only in certain cloisters; but it belongs to a period when tracery had almost developed its independence. The vault of the middle aisle is partly supported by short clusters of shafts which stand upon corbels placed above the pillars of the triforium, and partly by others which start immediately under those pillars.

The Minster at Beverley exhibits resemblances to Salisbury Cathedral, for, though in certain places the shafts which bear the groining of the nave start from the ground, in others the cluster of shafts commences upon a corbel above the arches of the nave and widens as it ascends. Each bay of the triforium has four well-proportioned openings surmounted by trefoil arches. Behind these stand very short colonnettes joined by pointed arches. The clere-storey windows are narrow and pointed, and the spaces between them are filled with arcaded work. The arches, corresponding to the shape of the groin, rise ever higher, and thus attain that exaggerated sharpness and pointedness to which the English writers on art have given the characteristic title of "lancet-shaped."

Lancet Arches are common in English structures of the period. These arches, in connection with other exaggerated proportions—as in the arches of the triforium at Beverley, in the depressed arches of the triforium at Salisbury, and in the pillars formed by the slender shafts united—bear witness that the English brought into use in their buildings **bizarre proportions** rather than such as were strictly harmonious and truly classical. They are the echo of that striving after the strange and the imaginative which was expressed in the English buildings of the twelfth century, but which there, held in check by the solemnity of the massiveness around them, was less inharmonious than here, where comparison with the classical harmony of the French buildings of the same date is so easy. The minster at Beverley has two transepts and a square end to the choir. The west front shows simply the three aisles of the nave, while in the Ca-

thedral of Salisbury an upper horizontal structure of the height of the middle aisle, richly membered with arcades and niches, lies in front of all three aisles.

Lincoln Cathedral was begun in the twelfth century, and in some parts—as in the chapels which are added to the sides of the choir as a second eastern transept—exhibits forms which appear nearly related to those of Canterbury. Yet the structure, with its three-aisled nave, transept with an eastern aisle, and its peculiar west front, is essentially a work of the thirteenth century. The upper part of the interior exhibits many systems, yet all combine to compel the shafts which bear the vaulting to commence on corbels above the arches instead of continuing downward to the pavement. The square eastern end has in all three aisles a magnificent traceried window, that of the central aisle being the largest. The exterior shows a second traceried window in the gable of the middle aisle, above the one just mentioned. The side-aisles also terminate in gables, which rise high above the roof, forming an Italian arrangement the history of which is given below (p. 229). The western façade is a large structure of the height of the central aisle of the nave, dominated by two turrets containing staircases, and by the gable of the nave. Three lofty and deep niches make the profile of the three aisles visible externally,¹ while the whole of the remaining surface is covered with arcaded work. Immediately behind this lofty wall rise two square western towers with slender round turrets at the angles, without spires, but with a platform such as is found in most English towers, as if the idea of spires had been renounced or as if they had not yet been completed.² Only a few towers have lofty spires.

The great churches of England are usually accompanied by extensive subsidiary structures grouped around a large cloister. The most considerable of these structures are the chapter-houses. Wells Cathedral has an octangular chapter-house, and Salisbury another, both with a column in the centre. That of the Cathedral of Lincoln is a magnificent decagon. The nave and transept of Wells Cathedral were built 1214–1239, the façade with its two towers in 1242, and the beautiful chapter-house was added soon after. The choir of Ely Cathedral was added to a Romanesque nave and transept between 1235 and 1252. In the interior system of this choir the peculiarities of early English Gothic are not only seen at their richest, but are also brought to their fullest harmony, the noble proportions being retained throughout.

In *Lichfield Cathedral* shafts are continued from the pavement to the springing of the vault. The arcades and the triforium have noble proportions, but from want of space, which precluded the construction of clere-storey windows like those of the choir of Ely, the clere-storey has traceried triangular openings.

¹ Bishop Remigius commenced his Norman cathedral in 1074, and the three lofty and deep niches of the west front are part of his work enclosed in Early English (thirteenth-century) work.—ED.

² These towers formerly bore spires.—ED.

The system of vaulting in the choirs of Lichfield and of Ely has made a step toward perfection in the increase of the number of the ribs and the diminution of the size of the separate groins, by which the execution of the vaulting is essentially made lighter, while the separate courses of the vaulting-stones, which had so long been entrusted to the binding power of the mortar, are interlocked, become shorter from rib to rib, and on account of this can be closed in more quickly. The summit of the vaulting is perfectly horizontal throughout the entire length of the middle aisle, and is even traversed by a horizontal rib which, like a continuous keystone, catches all the separate ribs of the groining, while, since it is stouter than the shafts, it bears heavily upon the entire structure beneath (*pl. 30, fig. 4*). The side-aisles have a straight eastern termination, while the nave is continued beyond them and ends in a polygon. The cathedral has a single transept with an eastern side-aisle, and on the west front are two fine towers with stone spires, which latter occupy more than half the total height of the towers; the entire façade, except these towers, is covered with arcaded work. At the intersection rises a similar but larger tower. The choir belongs to the fourteenth century. The chapter-house is an octagon with one axis lengthened.

Westminster Abbey, at London, was commenced about 1245. In 1269 the choir was consecrated; it has a polygonal apse with aisle and chevet of chapels, after the French system. The northern transept has three aisles, while the southern, where other structures occupy the angle between the nave and the transept, lacks the western side-aisle. Transept and choir have simple groined arches in the middle aisle. The nave, which was commenced immediately after the choir and was completed before the close of the century, has fan-groining in the middle aisle. The upper part of the interior, with its shafts rising from the ground, not only is noble and harmonious, but has also, like the arrangement of the choir, the greatest resemblance to the beautiful French system. The proportion of the triforium to that of the arcade beneath is a correct one, but it is here widened into a regular gallery, which runs above the entire side-aisle. The flying-buttresses, which in English architecture usually play a comparatively insignificant rôle, are doubled, according to the French mode, one over the other; yet another specifically English peculiarity stands boldly out—namely, the rather flat roofs of both the middle and the side aisles, which recall the antique rather than the northern Gothic. The parapets may be cited as another English peculiarity. It must also be noted as remarkable that the choir has not that considerable longitudinal development which we have found in the other buildings before mentioned, since, measured from the intersection, it has but one-third the length of the nave. At the beginning of the sixteenth century the middle polygonal chapel of the chevet was taken down, and in its place—in such direct connection with the choir that it may, in fact, be considered as only a continuation of it—was built a great chapel with three aisles and with five small chapels around its chancel-end. This

is known as Henry VII.'s Chapel (*pl.* 30, *fig.* 5), and is a fine specimen of the architecture of the time of that monarch, who founded it.

Exeter and York Cathedrals.—Exeter Cathedral, built between 1280 and 1370, exhibits magnificent decoration. Grand and noble stands out York Cathedral, built from 1291 to 1330. The choir belongs to the close of the fourteenth century; the façade, which is also of that period, was finished in 1405 (*pl.* 30, *fig.* 1). The chapter-house of this cathedral is one of the most interesting of its kind; it is an octagon 20 metres (65½ feet) in diameter, and of equal height, is ceiled with a magnificent fan-vault, and has no central pillar.

Melrose Abbey.—To this date belongs the restoration of Melrose Abbey by King Robert Bruce. Its foundation was laid in 1136 by David II.; the abbey was dedicated in 1146. Having been destroyed by Edward II. of England in 1322, Bruce undertook its restoration, but the edifice was burned by Richard II. in 1385. The abbey-church, dating mostly from the fifteenth century and now in ruins, presents a splendid example of the Gothic style.

Especially characteristic of the course of development taken by the style is the nave of Winchester Cathedral, rebuilt in 1393. Canterbury Cathedral (*fig.* 2) received at the close of the fourteenth century a third transept with a lofty central tower, and a three-aisled nave with two towers flanking the western façade. These new structures were commenced in 1376. In 1381 was built the great cloister of Gloucester Cathedral, with its beautiful fan-groined ceiling.

Timber-construction.—The ancient timber-construction which early in the Romanesque period attained to rich development and general use in England was not entirely abandoned even during this period. Though vaulting found entrance into the grand cathedrals, the national traditions remained in full force in simple churches and perpetually became stronger; so that wooden roofs soon procured recognition in important buildings. We find a rich, artistically-fashioned wood-construction adopted as a covering of the structures adjoining certain churches wherein ideas taken from secular edifices could to some extent be used. The improvement of timber-construction is strictly connected with that of secular buildings, which in the fourteenth and fifteenth centuries assumed a characteristic style of decoration. In Figure 6 we give the wooden roof of Westminster Hall, completed in 1398.

Among churches with beautiful wooden roofs may be mentioned St. Stephen's at Norwich, St. Mary's at Oxford, St. Mary's at Beverley, and the churches of Lavenham and Melford (Suffolk).

Characteristics of English Gothic.—In the course of development arose many peculiarities which may be considered national and especially belonging to English Gothic. We have already stated that the entire arrangement of an English cathedral is essentially different from that of a French one; we have remarked upon many peculiarities of the superstructure of the interior. As we go farther and consider the

vaulting, so that out of the radiating starlike groining was evolved the palm or fan system, which was in some cases by a peculiar construction developed into pendants of great size apparently suspended in the air (*pl.* 30, *fig.* 5).

Castles.—The fifteenth century gave England a series of castles which still exist and prove that convenience and comfort as well as strength and security were found in them. Hampton Court, Warwick Castle, Windsor Castle, Bramhall and Adlington in Cheshire, Eltham and Beddington in Surrey, and the ruins of Kenilworth, are splendid examples. The most important part of these castles is the great hall, which corresponds to the *salle* of the French and the *Palas* of the German castles (*pl.* 37, *fig.* 8). Yet through the requirements of the two countries the English castle is more of a palace than is the German. Externally it exhibits a well-developed façade animated by a large series of bays, while internally numerous chambers are connected with the great hall and express wealth and luxury as well as all the conveniences of life.

3. GERMAN GOTHIC, THIRTEENTH TO SIXTEENTH CENTURY.

We have already spoken (p. 181) of the comprehensive changes which French influence produced in German architecture at the end of the twelfth and the beginning of the thirteenth century. We have also recorded the poetical appearance which it gained through the admixture by holding fast the grand but simple solemnity of Romanesque architecture, with the addition of the fanciful but innately consistent and rational circle of forms of French art. We have shown how this poetical admixture endured far into the thirteenth century, at which time the Gothic style had in France attained the highest point of its development. During this time a few edifices were erected in Germany which manifest the full acceptance of the French style in all its purity.

The Church of Our Lady at Treves, which constitutes the chapel of the archbishop's palace, shows both in design and in execution a direct leaning toward France. That it was made polygonal may have been for the purpose of imitating the series of palace churches which can be traced back to the first centuries of the Christian era and are allied to the circular structures of the antique palaces and baths. But the arrangement of this church—a ring of chapels around a central structure, with a larger chapel projecting as a principal choir—the presence of round pillars, with which the vaulting-shafts are in part connected, the entire design of the vaulting and that of the windows, the profiles of the mouldings and of the ornamentation generally, and lastly the arrangement of the buttresses,—are all of them French. In all other German structures of the same date or earlier the buttresses had less projection. Without doubt a French architect commenced this building in the year 1227, and it may have been executed by French workmen. It may have been a German who completed it in 1244, since the tower in the centre has a completely German outline. The portal also shows some German influence.

Temple of the Holy Grail is described as a central church surrounded by chapels, such a structure as he describes was not that we no longer possess the original, but borrowed from a French model (for the German sister even more than French churches), but only a reproduction by a master. But there can be no doubt that this latter is his entire description.

The Temple of the Grail is as a magnificent castle-chapel, an ideal castle, and therefore the poet describes it as surrounded by chapels, because such structures form a link between the Pantheon at Rome through the Church of St. Peter to the Temple to that of St. Mary at Treves. But doubtless it was the ideal of the architecture of the period, the beginning of the beginning of the thirteenth century. The slender pillars, and the towers, the central tower, the slender bronze capitals, the wealth of foliage upon the capitals, all appertain to French architecture of the thirteenth century. In slenderness these pillars could be surpassed by the stone pillars which were the ideal of the thirteenth century; they were also the foundation of the inharmonious exaggerations which are only the expression of that lightness at which both French and English aimed.

The Chapel at Treves is likewise a small Temple of the Holy Grail, and the architect had before his eyes the same ideal as the poet, but who executed in stone all that was possible, while the poet gave his imagination full play and built up in words an ideal which the architect was unable to express in stone, and which baffles all attempts to form a symmetrical plan because the poet collected the various ideals furnished him by each individual architect. We may therefore see in the unique structure at Treves an image of the Temple of the Holy Grail, just as we find it in the exceptional Church on Mont St. Michel, and as we shall find it in some other exceptional German castles and churches.

The Cistercian Church at Marienstadt, in Nassau, was commenced in 1127, the year in which the chapel at Treves was founded. This exhibits the completely-developed Gothic style, yet in the treatment of the details gives the impression that a German architect here put into practice his French studies.

The Prémonstratensian Church of All Saints in the Black Forest, commenced in 1225, shows very remarkably the gradual introduction of the Gothic style. Some portions are pure Romanesque, while others are as purely Gothic. The side-aisles have nearly the same height as the nave in arrangement which we have found in the Romanesque architecture of Germany (p. 183), which is general also in certain districts of France, and which in the Cathedral of Poitiers, of about the same date, attained beautiful results. In Poitiers the three aisles are of nearly the

same height, but are also of nearly the same width, while the German design still retains the narrow side-aisles.

The Church of St. Elizabeth at Marburg, begun in 1235, also retains the narrow side-aisles; and in this church we find French forms exclusively, yet of a severity that makes it scarcely credible that a French architect executed them. The ground-plan is not French; the polygonally-terminated choir and transepts have the proportions of those of a German Romanesque church—namely, a square closed by an apse—only that the vaulting does not mark the square form and the apse is a half-decagon instead of a half-circle. The surrounding aisle and chapels—which a French architect would certainly not have omitted—are here wanting. Yet the internal arrangement of the choir is exactly like that of French structures, as are also the lofty clere-storey windows, while in place of the arcade there is a second, lower tier of windows like those which would be visible in a French structure between the arches of the apsidal aisle of the choir. The three-aisled nave has massive pillars with four shafts, as in French architecture, but the disproportionate size of these shafts is the more conspicuous since they have no wall to support, and the ratio of height to diameter is much less than in the French cathedrals. The structure was completed in 1287 by the addition of two towers on the west front. These have many French traits, especially in the design of the massive buttresses at the angles, and in the manner in which the octangular spires above the gable rise out of the square towers.

Spread of the Gothic in Germany.—Although the last poetical manner of the Romanesque style was general in Germany until the middle of the thirteenth century and it is only exceptionally that we meet with works containing so many French elements, yet we may assert that the introduction of the Dominican and Franciscan orders largely contributed by the erection of new churches to the spread of the Gothic style throughout Germany. It is true that these begging friars did not erect works of great magnificence; it was not the splendor of the form-system of the great cathedrals which determined the style, but the lesser massiveness which lay in the French system of construction. On page 193 we gave a description of the plan adopted in some French buildings belonging to these orders, particularly in Dominican churches.

German buildings of the most advanced Romanesque style—as the Cathedral of Limburg, on the Lahn, the nave of St. Sebald at Nuremberg, etc.—still have heavy pillars placed near together and thick walls which were not only costly as well as massive, but scarcely afforded space for an assembled crowd to circulate between them from the narrow middle aisle to the side-aisles. Thus a system of construction which afforded slender pillars that scarcely separated the aisles, supported the wall masses upon a few points, and needed only thin walls between these points, must have been welcome to these orders, since it made it possible at a very reasonable cost to enclose comparatively spacious churches.

The Dominican Church at Esslingen, which was constructed 1233–1268,

is a pattern of a church built for a practical purpose. The French construction is there surpassed. The architect has erected upon widely-spaced, thin, round columns connected by great pointed arches a groined nave which has scarcely more height than width, and has thus reduced the mass of the buttresses, notwithstanding the thin walls. The buttresses seem very small, but the French had a certain fondness for buttresses, and used them more to decorate the design than to supply the absolute needs of the case. Thus it was that the German, or perhaps French architect, could not resolve to decorate his wall-masses with great windows reaching from pillar to pillar, but has preferred to follow the German *penchant* for visible walls, which he has made exceedingly thin, and has pierced with only very small windows in both the aisles and the nave. He has, in fact, endeavored to tone down the great soberness of the system by the sparsely-distributed light. When we take into account that the only decoration was that of color, the interior does not lack dignity, while the exterior pleases by its modesty and expressiveness, and even now presents a most agreeable appearance in the midst of the simple dwellings of the burghers.

What we have said of this structure applies more or less to a series of other structures—to the Dominican church at Constance, begun in 1234; to that at Coblenz, commenced in 1239; to that of the Minorites at Cologne, the nave of which, with its simple buttress-system, is again a true pattern of economic construction; and to the churches of the orders at Colmar, Gebweiler, Schlettstadt, Basle, Zurich, Bern, Königsfelden, etc., the construction of which reached, indeed, into the fourteenth century.

The French system had by the middle of the thirteenth century become more general in Germany, and soon occupied the ground exclusively and in many ways accommodated itself to German ideas. Walls were never entirely dispensed with to make way for great windows reaching from pillar to pillar, but a mass of masonry was left on both sides of the window, which attained slender proportions, as we have already remarked of St. Elizabeth's at Marburg. German taste was not inclined to give important extension to the system of buttresses, and especially to flying-buttresses; neither did it love that almost exaggerated height to which the French cathedral-system had given rise. It generally made use of entirely plain massive pillars, but for the narrow spacing of the Romanesque substituted wide spacing and broad side-aisles, and finally it showed a particular taste for churches with aisles of equal height. In some edifices French qualities are more prominent, and, without doubt, in most cases intentionally so—probably on account of the superintendence of a French architect. It is a fact that great cathedrals were not erected in Germany during the thirteenth century, but in the flourishing cities municipal and collegiate churches were built in great numbers, as they were, also, in the fourteenth century.

An important church, beautiful in its design and rich in its adorn-

ment, is St. Mary's at Reutlingen, built between 1247 and 1343. The nave of Strasburg Cathedral, with its fine triforium—which was rebuilt about the middle of the thirteenth century and finished in 1275—is French in style; yet even here the relatively wide side-aisles and comparatively small height of the nave, and the distance of the strong pillars from one another, are German elements, which were, however, partly necessitated by the need of a harmonious adaptation to the existing Romanesque eastern part. The erection of the Church of St. Vincent at Metz was begun in 1248, and was completed one hundred and thirty years later, after a long interruption.

The Cathedral at Metz was begun about the middle of the thirteenth century, but the works were soon discontinued, and were not recommenced until the next century. About the middle of the thirteenth century, evidently under the influence of the works at Strasburg, the church at Weissenburg, in Alsace, was built; it was finished in 1284. In it is repeated the octangular cupola over the intersection which at Strasburg belongs to the Romanesque system—a repetition which proves how tenaciously the Germans clung to their ancient traditions.

The Minster of Freiberg, also, in some bays which perhaps date from before the middle of the thirteenth century, shows a Gothic system of forms associated, almost intermingled, with the Romanesque of the transept and the octangular cupola on the intersection, while the remaining bays, built in the second half of the thirteenth century, bring the system to fuller and freer perfection. Here, as at Strasburg, the side-aisles are wide, the pillars are widely spaced, and the nave is of comparatively small height, though higher than the Romanesque portion. The triforium is absent, and the upper part of the nave in general is somewhat abridged. But the beautiful tower, finished at the close of the century, is of wonderful development (*pl. 32, fig. 1*).

The Cathedral of Cologne, the most important work executed in the second half of the thirteenth century, is entirely French. The foundation-stone was laid in 1248, and the choir was completed in 1322; but the transept, nave, and towers were recently executed according to the ancient design, and were completed only a few years ago. The plan (*pl. 33, fig. 1*) shows a nave and choir with five aisles and a transept with three. The choir has its apsidal aisle and crown of chapels, precisely after the fashion of the French cathedrals, and the transepts, the flying-buttresses with the great pinnacles, the tremendous height of the nave, the complete want of walls between the piers, and the great windows (*pl. 31, fig. 6*) fill up the entire circle of the forms of the French cathedral. As the section is upon the same scale as those of French cathedrals shown on Plate 29, it is easy to see that the whole is but a further evolution of the French system. The façade with its two towers (*pl. 32, fig. 3*) is also a step farther in the same direction—the last artistic result of the entire series.

The choir of the Cistercian abbey-church at Altenberg, near Cologne,

was rapidly built between 1255 and 1265, and the nave immediately after, though it was not completed until the second half of the fourteenth century, after the works had been discontinued for a long time. In its general design it is similar to Cologne Cathedral, though very simple in its forms, compared with that magnificent edifice. The collegiate church at Wimpfen, on the Neckar, was erected 1262-1278; we know that it had a French architect, and that his work was constructed *opere Francigeno*—i.e., in expressly French style. The French system was also carried out in St. Catharine's at Oppenheim, which was contemporaneous with the Cologne Cathedral (1262-1317). This church exhibits an almost prodigal richness of the exterior, particularly of the nave. There is no chevet to the choir, which is laid out more according to German simplicity, expressing the simple purpose of a collegiate church. An octangular cupola-tower rises at the intersection, and the nave, notwithstanding all the complication of the design, is relatively low.

Other structures of the second half of the thirteenth century are the churches at Mauermünster, Schlettstadt, Rufach, and Neuweiler, the great buildings which were added under Bishop Conrad Probus (1272-1290) to the cathedral at Toul, and the cathedral at Minden, and St. Mary's at Osna-brück—two beautiful churches with aisles of equal height, the latter completed in 1318. We must also mention the churches built in Hesse in imitation of St. Elizabeth's at Marburg, and the arrangement of which was carried to perfection at Friedberg, Wetzlar, and other places of the district. If we finally state that hundreds of small city and village churches were built, we have a general picture of the constructive energy of Western Germany, in which, as follows from its geographical position, the French architect had most immediate influence, and which he first conquered.

Magdeburg Cathedral.—But pure Gothic made its way into the Saxon countries about the middle of the thirteenth century. The Cathedral of Magdeburg, erected in the beginning of the century, showed French influence in the complete chevet; yet we believe that this edifice must still be considered as Romanesque in its older parts, though as the works progressed the forms and methods of construction of the Gothic style came more and more into the foreground. The clere-storey windows of the principal apse are Gothic; the transept is completely so, and in the nave the plan was altered: the system of double bays in the nave was changed, so that the intermediate piers were done away with and the side-aisles made considerably wider than those of the original design, which contemplated aisles of the same width as those of the choir (*pl. 31, fig. 2*). Great arches span the spaces between the main pillars, which alone exist; yet as a survival of the older plan, and in order that the side-aisles might be well lighted without too disproportionate a width of the windows, the exterior wall is divided into two bays by an intermediate rib parting the vaulting of the side-aisles, and each bay has two windows and a wall-rib. As the superstructure progressed and the vaulting of the

middle aisle came to be considered, the same desire not to have the windows too broad made itself felt, and, as oblong bays had then for a long time been usual, a shaft resting upon a corbel was carried from the crown of the nave-arches (occupying the position of the intermediate pillars of older churches) to the springing of the vaulting, and each bay was thus divided into two oblong bays of groining. The construction was delayed far beyond the end of the thirteenth century, and the completion belongs to the close of the Gothic period. The Cathedral of Halberstadt saw scaffolds and workmen again in the second half of the thirteenth century. The design of a portion of the lower part of the side-aisles corresponds to that of the Cathedral of Rheims, but this plan too was soon abandoned, and the fourteenth century saw the work completed.

The Church of Schulpforte would seem very peculiar did we not recognize in it the continuation of the evolution of the style. The building was commenced in 1251, and the choir, with its polygonal apse and chapels, without a surrounding aisle, was first erected. Evidently the architect was acquainted with the school of Champagne, and, as in the already-described church of Rieux, constructed a polygon with very strong walls, with deep niches of the height of the windows; so that only the angle-pillars actually retained the full thickness. These angle-piers are pierced below, so as to give a free passage in front of the windows. The nave has its bays of vaulting equal to two of those of the aisles, and the pillars are rectangular, as they were even in the latest period of German Romanesque. Shafts are added on the side-aisles and others are borne on corbels in the nave to support the square vaults, which remain as a survival of the Romanesque amidst perfectly Gothic construction and mouldings.

Decidedly German is the design of the very high and narrow windows of the nave, which allow by far the greater part of the masonry of the wall to be exposed. The buttresses in the wall of the side-aisles, corresponding to the double-bay plan, are alternately large and small, the less massive having only to withstand the thrust of the vaults of the side-aisles, while the large ones rise above the roofs of the side-aisles and send simple flying-buttresses to the walls of the central aisle to take the thrust of its vaulting.

The Cathedral of Meissen is without Romanesque survivals, but also without elements which allow direct French influence to be traced. It was commenced with the most noble forms in 1247, but its nave, planned upon the ancient basilica, was completed in the first half of the fourteenth century.

In the second half of the thirteenth century nave of three aisles of equal height was added to the choir and the church at Nienburg. In the older part the Romanesque nave, unlike that of St. Elizabeth's at Bamberg, has wide aisles and widely-spaced, slender pillars.

teenth century a transept and choir were added to the Romanesque nave of St. Mary's at Arnstadt. The choir has three aisles of equal height, ending in three corresponding apses, the central largest one of which projects farthest eastward. This arrangement was during the fourteenth century the normal one throughout a great part of Germany. The portal of the transept shows many resemblances to Amiens, also the richly-constructed traceried windows, reaching from pillar to pillar and superseding the walls. The piercing of the buttresses of the choir is likewise an echo of the French manner.

To the second half of the thirteenth century (but partly also to the fourteenth) belong St. Mary's at Heiligenstadt and St. Blasius and St. Mary's at Mühlhausen, the last a basilica with five aisles of equal height, transept of a single aisle, and choir with three, arranged as at Arnstadt. A considerable part of the cathedral at Erfurt was executed at this time, and the same is true of the church of the Barefooted Friars.

Old Church at Ratisbon.—It was late before the Gothic style was entirely adopted in the region of the Danube. The so-called "Old Parish Church" at Ratisbon (St. Ulrich), near the cathedral, was evidently originally the chapel of the bishop's palace, though it was designated the parish church of the cathedral as early as 1263. It has so many Romanesque features that we should reckon it as belonging to that style were it not widely separated from it in methods of construction, while part of the mouldings also express the French system. The plan is square, and it is evident that the structure had originally two storeys, since groined vaults carried on low pillars form a low crypt-like hall beneath. The more lofty second storey probably had originally five aisles—three high ones of equal width in the centre, and two lower side-aisles of equal width—unless the middle portion formed a cupola-like central tower. At the present time, together with many other alterations, the middle vaults of the lower chapel are taken away, and thus a central room of the height of both storeys is formed; so that it gives the impression of a very high picturesquely-constructed hall with galleries.

New Church at Ratisbon.—In 1273 a fire destroyed the bishop's palace and the old cathedral, and in 1275 Bishop Leo laid the foundation-stone of the present cathedral. Early in the following year a portion—evidently the southern apse—was consecrated, so that worship could be held therein, while the old cathedral was entirely demolished and the new one raised little by little, until in 1309 the work must have come to a preliminary conclusion, since transept and choir were finished and the nave and façade with two towers were laid out. The entire plan (*pl.* 31, *fig.* 4), which belongs to this period, is completely German.

The choir (*fig.* 3), with its three apses, which we have already proved (as at Arnstadt) to be a normal German arrangement, in no wise recalls French models. Also the broad side-aisles and the arrangement of the transepts, which do not project beyond the latter, are German; yet the profiles of the pillars and the internal superstructure of the choir and transepts, with

their triforium and immense windows, are French. Probably these were not copied directly from French models, but from German—perhaps from the Strasburg Minster, since already the walls are superseded by richly-developed traceried windows. The windows of the principal apse are extremely beautiful, and are entirely in the spirit of French architecture; the triforium is carried completely around as a separate division; the windows below it, corresponding to the arcades of the longitudinal part of the choir, are each set on the outside of separate niches, while a second, upper series of windows, set farther inward, continues those of the clere-storey.

The Dominicans also, who came to Ratisbon early in the thirteenth century and had established an old church there, commenced a new structure at the same time that the cathedral was building; from the simplicity of the design, it was finished in 1277. Fully-developed Gothic forms were still later in spreading beyond the Danube. The cloister of the College of Klosterneuburg, built about 1291, has traces of Romanesque; yet by the close of the thirteenth century even the Danubian regions had accepted the Gothic style perfectly and universally, and only those modifications which German taste had generally wrought in it were evident in these districts. Everywhere in Germany smaller churches were erected in this style.

Later German Gothic.—Meanwhile, another spirit had in the course of the thirteenth century obtained the upper hand in Architecture, and none the less because of the circumstance that Gothic was practised as a foreign style, principally on account of the sumptuous external effects obtained from it. The modest Romanesque cycle of forms was in its consequent development nothing but the result of a simple constructive method and of an intention to make the entire result characteristic, and unintentionally a charming display of individual details, brought out by sparing ornament, was regularly yielded by it.

The complicated Gothic style also developed purely out of construction; only, since in its outer expression it afforded more resting-points to the eye, the question arose how this construction should be externally displayed so as to render apparent to the eye the functions which were subserved by each constructive part. So long as only the constructive system continued to develop, the course of the development of the details was strictly connected with it; and when construction had reached its highest point and could develop no farther, the evolution of forms was compelled to stop at the same point. Yet the attempt was made to find an expression which should be always practicable, to refine the forms that had been introduced, to search for reciprocally favorable geometrical proportions which should always produce a pleasing impression upon the eye. As ideas developed in this direction, the feeling that the outward form was only the result of the inward working of physical forces by degrees lost its strength, and the form came to be regarded as something important in itself.

Development of Form-system.—Forms which grew directly out of the construction seemed too harsh, and were toned down; other forms pleased the eye, and were for that reason brought in as ornaments in situations where they had not that inner significance out of which they were first evolved. As soon as the giving of pleasure to the eye, in place of inward meaning, became the basis of form-development, a purely æsthetic school-system was evolved which was founded and established entirely on theory. Germany accepted Gothic as a completed whole the outward aspect of which gratified the eye, and studied to perfect whatever was pleasing. In consequence of this, the established scholastic German form-system is, in fact, the most attractive and the purest.

We have noted (pp. 192, 196), in describing the cathedrals of Carcassonne and Beauvais, that this change was effected in France early in the thirteenth century. In Germany it was also completely effected by the close of the century—unless, indeed, we put it back to the middle of the century, to the moment when, in consequence of its beauty, the entire form-system of Gothic, with its necessities of construction, was deliberately accepted and no further attempt was made to introduce new elements into the native Romanesque. It cannot, in fact, be said that Germany, after it had taken this step, added one iota to constructive Gothic. What Germany did concerned only the evolution of detailed form, except such small changes as were rendered necessary in constructive relations by the altered purposes and varying materials of particular districts. But, though Germany accepted the entire form-system only out of regard for its outward attractiveness, it took henceforward the greatest interest in the external conventional development of the style.

Though probably a member of a French masonic guild, whether a born Frenchman or an affiliated German, designed the plan of the cathedral at Cologne, yet the system of details displayed in the entire superstructure, so far as the choir rises above the crown of chapels, is entirely conventional German. This is expressed chiefly by the striving after symmetry in the details, by the correct proportion of each profile, the relations between the hollow and the round mouldings, and the arrangement of the ornaments—all matters which would nearly concern the German architect. By this rigidity a perfect symmetry of the single parts was reached—a greater symmetry than was attained by either the French or the English school. The latter was too *roman*, while in France the perpetual development of construction had extraordinarily sharpened the sense of what was characteristic; but since the characteristic usually stands in direct opposition to theoretical formalism, the French did not possess that feeling for the absolute idealism of pure theory which was native in Germany.

German Idealism constructed a school-system which was in fact an ideal one—that is, it was noble, harmonious, and full of delicacy of outline, yet even in this stage had a little of the frigidity of a school, and lacked all that freshness and character which enchant us in the solemn calm of the German Romanesque and in the genial development of the

French Early Gothic. Even the slight want of fulness and harmony in the French school, even the *rococo* of the English, deprived them of this frigidity, since there can be seen in them traces of the older characteristic use of detail, or a substitute for such detail, which—at least, for the moment—satisfied an eye not perfectly trained.

The idealism of the conventional school of German Gothic, as shown at Cologne, has almost attained to the fulness and delicacy of beauty of the Greek system of forms. But it could not keep it for so long a time. The theory was the ideal work of a great master, but every master who enjoyed recognition and a following could set up another theory of harmony and line-beauty, and each master of less importance could by imitation increase the rigidity, but could scarcely reach the delicacy. Thus early in the fourteenth century an astonishing sobriety manifested itself as the result of this pure ideality through the operation of conventional methods. It is beautiful, but tiresome, since it lacks character. This at last wearied the people, and attempts were made to remedy the monotony through fantastic forms.

Fancifulness of Forms.—Since the idea that form must have an inward meaning had been lost and the desire was simply to please the eye, a bold master did not see why, if pinnacles and canopies constructed out of right lines were proper for this or that position, he should not make them curved if they were but beautiful. The pinnacle of the tabernacle work was purely an applied decoration the aim of which was to animate a decorative work. Ought it not to subserve this purpose in a yet greater degree if, instead of standing upright, it twined three times around itself or around its neighbor?

Thus it was with all the parts, and the door was opened to the greatest capriciousness of form—not a caprice which allowed each individual to do what he liked, but one which was firmly established upon rules; for by the outward constitution of the masonic guild each member, whether important or insignificant, belonged to the school and was held fast by it. But after the rigid severity of the fourteenth century was broken, the school of the fifteenth century was ready to introduce whatever the wildest caprice could imagine. This brought new life. Fresh and freely bubbled here bold humor, there conservatism assumed an undreamed-of dignity, and in another place arbitrary severity made itself felt; in short, it gave again a varied image of full life as many-sided as life itself; but ideality was gone.¹

When we said that the form was no longer the result of the inner forces, we referred only to those physical forces operative in construction which are based on the qualities of the materials and on natural laws,

¹ For the adornment of surfaces English Gothic for the most part used ornaments which were purely decorative. The faults of German Gothic are quite evident in Cologne Cathedral, which cannot be called Gothic in the sense in which the name is applied to Chartres, Amiens, Rheims, St. Ouen, Westminster, Salisbury, or Lichfield. Italian Gothic, though still less Gothic than is German Gothic, since it is never freed from an admixture of classicism, makes up for its want of purity by its beauty.—En.

particularly upon gravity, the resistance of which must be overcome by construction; the place of these was taken by an intellectual force which guided the direction of form-development. This intellectual force was the expression of popular taste endeavoring to find its corresponding ideal, and therefore the works produced were still in a sense characteristic, though their direction was no longer natural, though they no longer found their ideal of beauty in the expression of construction and in the display of the forces working therein.

Notwithstanding the degeneracy of these works, they were significant of the German popular taste at that time. They represented the tendencies of the prosperous burghers of the German cities, who not only erected utilitarian structures, but also built churches in which they could worship God in their own fashion. If we regard the Romanesque architecture of Germany as the expression of an ecclesiastical taste and designate Early Gothic as that of a chivalric spirit, we must consider German architecture of the fourteenth and fifteenth centuries as the genuine and fullest outcome of the citizen spirit, with all its preferences and all its weaknesses expressed according to citizen ideas.

We cannot enumerate each individual work which the fourteenth and fifteenth centuries produced in Germany, and it would require too much space to designate the peculiarities of the local schools. Churches, large and small, were built everywhere, but we must content ourselves with mentioning a few.

Façade of Strasburg Cathedral.—We have already mentioned (p. 209) the completion of the nave of Strasburg Cathedral. Two years later, in 1277, Erwin von Steinbach began the erection of the façade with its two towers, the principal part of which, as far as the platform, is essentially a work of the fourteenth century, and in the two lower storeys, which are ascribed to Erwin and his son, has all the characteristics of that period. Above the platform the towers were designed to be octagonal, but only one was completed in 1439, by John Hültz of Cologne (*pl.* 32, *fig.* 2).

In 1313 the foundation of the Wiesenkirche at Soest was laid. It was commenced by John Schendeler, but its execution was delayed throughout the whole of the fourteenth century, and the two towers were left even to the fifteenth century. These were begun in 1429, and their entire execution recalls the fifteenth rather than the fourteenth century.

St. Stephen's at Vienna.—The choir of St. Stephen's Church at Vienna, commenced in the early part of the fourteenth century and finished in 1340, exhibits the calm, pure, and noble forms of that time. Like the Wiesenkirche at Soest, it has three aisles of equal height, ending in three apses. The nave was begun in 1359, and has a middle aisle slightly higher than the side-aisles, which are almost equal to it in width; the splendid architecture of the exterior of these aisles is exceedingly harmonious. Two massive towers at the sides of the aisles take the place of the transepts. The southern (*fig.* 4) was finished in 1433;

the northern still awaits completion. Since the naves were not sufficiently lofty, in order to make an imposing exterior appearance the height was doubled by a steep roof, whose great elevation was made tolerable by gables regularly placed one over each bay, their lower portions being connected with the architectural formation. A Romanesque façade with two towers still remains, but its effect is injured by two chapels, built upon the same plane with it, on each side; and the general appearance of the building does not gain by the addition of these chapels.

A Gothic choir, commenced in 1321 and completed in 1431, was added to the Cathedral of Augsburg. The emperor Lewis of Bavaria built at the establishment endowed by him at Ettal a round church which may be considered a copy of the Temple of the Holy Grail. The construction of Metz Cathedral was resumed in 1330. Nothing of importance had been done in the thirteenth century, and even the fourteenth has left us but a fragment. In 1340 the Church of Our Lady at Münster and that of St. Catharine at Osnabrück were commenced, while the choir of the Cistercian church at Zwetl was begun in 1343, and finished forty years later. This choir has three aisles of equal height, yet the side-aisles surround the apse, and there is a wreath of low chapels around the whole. The arrangement is largely influenced by that of the church of the same order at Pontigny. The love for buttresses and flying-buttresses is also evidently taken from France, for, though the chapels are separated by massive walls which naturally would have taken the thrust of the vaulting, buttresses are here unnecessarily placed in advance of the outer walls of the side-aisles, and take the thrust of the vaults by flying-buttresses to the wall of the middle aisle. It is clear that nothing but a liking for the external aspect of this constructive device has here occasioned its use.

Cathedral of Prague.—In 1343 the emperor Charles IV. commenced the construction of the Cathedral of Prague with the aid of a French architect brought from Avignon, Matthias of Arras by name. He was followed in 1352 by the German Peter Arler of Gmünd, in Swabia, who at this time was but twenty-three years old, and who completed the choir in 1385. The only modern portion is the restored vaulting of the nave. Figure 2 (*pl.* 33) gives the ground-plan; Figure 3, the interior. The arrangement is naturally completely French, as Charles IV. drew his inspiration for the cathedral directly from French architecture and procured his architect from France. The plan of the cathedral follows exactly that of the French, since it has a complete chevet. The system of construction, from triforium to pillars, has an unequalled lightness; the German master has therein perfectly followed the arrangements of his French predecessor.

In the execution of the details there are two different systems. The most advanced one, with pear-shaped roll-mouldings in the pillars, is found not only in the end of the choir, but also in the part first begun, but, from its lesser idealism and its resemblance to the profiles of the

choir at Carcassonne, where similar roll-mouldings occur, may be the work of the French architect. The apparently older system, with round mouldings prominent in the shafts, as at Cologne, in the older French buildings, and in most German structures of the fourteenth century, probably owes its existence to the German sentiment of the still young Peter Arler, who in portions which he executed later, as St. Wenzel's Chapel, developed another set of mouldings characterized by considerable tenuity. The apparently older form was adopted in the finishing of the edifice, and thus the interior appears as represented on Plate 33 (*fig. 3*).

To show what would be the appearance of such an edifice built at this period, we have depicted a great Gothic cathedral, the flood of light moderated by passing through the stained glass of all the windows and falling on statues and pillars, altar, shrines, and, above all, upon the screen, which, itself a formally-developed and splendid structure, entirely separates the choir from the nave. Since a tower was necessary to contain the bells, and since even at the close of the fourteenth century it had become doubtful whether the structure would ever be entirely finished, a tower was commenced next to the transept, cutting into the plan in an arbitrary manner; but it was never entirely completed.

About the same time that Prague Cathedral was constructed those of Kaschau and Cracow were built, the first distinguished by its peculiar plan and by a certain fancifulness of execution.

St. Lawrence at Nuremberg.—The nave of this church was perhaps constructed before the middle of the fourteenth century. It has low side-aisles, buttresses which originally projected considerably (the spaces between which were afterward occupied by chapels), and simple flying-buttresses. The west front has a portal of the noblest proportions, above which are the emperor's arms, a beautiful rose-window and gable, and two square towers of several storeys, recalling the Romanesque period and terminating in two low octangular upper storeys (*pl. 31, fig. 1*). The upper part of this façade belongs to the second half of the fourteenth century; the lower part, as the coat-of-arms proves, to the time of Charles IV.

In 1346 the small basilica at Strassengel, in Styria, was begun, and without doubt its elegant tower was finished in a few decades—perhaps in one. In 1351 the great collegiate Church of the Holy Cross at Gmünd, in Swabia—the birthplace of Master Peter of Prague—was built, and his counsel and influence may have had much weight; for, though the edifice was long in course of construction, not only do many details recall Peter Arler's Bohemian work, but also the disposition of the chevet agrees with that of the choir of St. Bartholomew's at Kolin, probably commenced by him in 1360, and finished in 1378. Here, indeed, there is neither in the profiles of the pillars nor in the vaulting any trace of the idealistic tendency of the beginning of the fourteenth century. The mouldings of the ribs and arches pass downward into the perpen-

dicular parts without any separating capitals, and are broken only by a simple bevel around the base. The same master built the polygonal Karlshoferkirche at Prague. Like the English chapter-houses, it is octagonal. Its diameter is more than 20 metres (65 feet); it is without a central column, is vaulted with beautiful radiating groining, and has a small choir on one of its eight sides.

The Church of Our Lady at Nuremberg was also built (1355-1361) under the influence of Charles IV. The choir of the Church of Maria Stiegen at Vienna was erected between 1358 and 1365; the lofty choir, with three equal aisles, of St. Sebald at Nuremberg belongs to the dates 1361-1377, and St. Mary's in the market-place at Würzburg was completed in 1377. The tower of this church was recently finished.

The Church of St. Lambert at Münster—a gem among the Gothic monuments of North-west Germany—belongs almost entirely to the fourteenth century, but some of the most decorated parts were finished in the following century. Some great buildings were commenced at the close of the fourteenth century, and were not finished until far into the next. St. Barbara at Kuttenberg was in 1380 laid out by Peter Arler in the most magnificent style of the French cathedral system, but the structure was for the most part carried out in the fifteenth century.

The Minster at Ulm (*pl.* 33, *fig.* 4) was begun in 1377 and principally constructed in the fifteenth century, but the execution of the tower (*pl.* 31, *fig.* 5) was suspended in the sixteenth century; so that its completion is reserved for our age. This is one of the most characteristic examples of the wild eccentricities of Late Gothic. The minster at Ueberlingen, also, though commenced in the fourteenth century, was for the most part constructed in the fifteenth.

Antwerp Cathedral.—The edifices of the Netherlands are in many respects nearly related to those of France. It is, therefore, not surprising that the Cathedral of Antwerp, originally designed with five aisles, the side ones very narrow, should conform to the French system (*pl.* 33, *fig.* 5). Later on, a third, wider side-aisle was added on each flank. The façade, designed to have two towers, was commenced in 1422 by the architect Jean Amel of Boulogne, and has one tower carried up to a dizzy height, while the other does not reach to half the elevation (*pl.* 32, *fig.* 5).

The construction of the choir of the upper parish church at Bamberg was begun in 1392, and that of the nave of Maria Stiegen at Vienna in 1395. The beautiful turret of this church marks its conclusion in the fifteenth century. The parish church at Bozen was also built at the close of the fourteenth century, and the Theinkirche at Prague between 1407 and 1460. This has on the west front two towers the slender wooden spires of which have four small turrets at their base and four others at half their height. The construction of the towers of the Cathedral of Frankfort-on-the-Main lasted from 1415 to 1512, and that of the Minster of Berne, begun in 1421, was also continued into the sixteenth century. The Church of SS. Peter and Paul at Görlitz was built between 1423 and

assumes more or less importance; thus the walls of the minster at Uim are constructed of brick, though the use of this material has no influence on the characteristic forms. Brick is also employed in a series of Bavarian edifices, as in the Church of Our Lady at Ingolstadt (1425-1439), the majestic interior of which produces an extraordinary effect of spaciousness, while the exterior, with the two diagonally-placed towers of the façade, is sober. This church has three aisles of equal height, an aisle running around the apse, and buttresses enclosed within the interior. Another brick structure is the Church of Our Lady at Munich (1468-1488), in which building the brick-construction makes its characteristic forms apparent.

To the category of brick edifices belongs also St. Martin's at Lands-hut, also a basilica with slender pillars which produce an impression of daring almost hazardous. The tower shows the peculiarities of brick-work combined with those of stone-work, and rises with a richness of details far inferior to that of the towers of Strasburg, Vienna, and Antwerp, but with remarkable slenderness, to a similarly dizzy height.

Secular Structures of the Thirteenth Century.—We have followed German ecclesiastical Gothic without a break and without a glance at contemporary secular structures, and have seen that many buildings follow closely the French manner, while others modify that manner so as to produce one specifically German, which, though regarded as a unity, is seen to be divided into various schools. Though characteristic form-development may have remained deficient in Germany, the *ensemble* of the entire group of buildings was very characteristic, and both the entire structure and the individual parts express their purpose most clearly.

The same is true of secular architecture, which, indeed, learned its form-speech from church architecture, and only introduced into it such slight modifications as were necessary to give expression to the entirely different problems, and therefore to entirely different conceptions. But in their *ensemble* these secular edifices exhibit the most thorough characterization and present an appearance which affects us so differently that we can scarcely believe that the secular structures of the thirteenth to the sixteenth century are the expression of the same popular taste that is exhibited in the churches of the same period; and yet this is the case. It but expresses the difference of purpose.

Defensive Works.—Castles, city walls, fortress-towers and gates, do not express a sublime enthusiasm. They are not hymns of praise to the Most High; in defiant solemnity they menace the approaching enemy, whorin each single part is so arranged and so placed as to repel most effectually. There is also in these structures—in massive sombreness and in motifs—an aspect which, the occurrence, in many places, of a v untrained eyes think though by al, is yet so fasc en designed, has been the en for the ground, freeable alternati on dict some capric only a satisfac

tory artistic play of lines. This is, however, in no wise the case: the highest characterization is expressed in all this. In private structures also the spaces are regulated according to their requirements. Each window is placed exactly where need dictates and is of the exact size that need prescribes. Only when necessity is satisfied come in secondarily the artistic ideas of proportion and symmetry, which develop themselves, in a regularly axial direction, into a system of equally-balanced masses.

Fortifications had their small openings, long or wide, through which the approaching enemy could be assailed with arrows or bullets, with stones thrown down upon him, or with boiling water, without affording him the opportunity to place his scaling-ladders. Even in military architecture there is evident a development which is interesting in the highest degree, since the progress of the entire art of war, and the various kinds of assault and of defence, as well as the continued improvement of weapons, are mirrored in it. In the same manner the development of the dwelling-house expresses that of the *bourgeoisie* and the gradual entrance of the refined necessities of life into the circles of the higher classes, while the advance of the cities in importance is expressed by their Rathhäuser (town-halls). If we regard the often splendidly-decorated fountains and the hundreds of other public monuments, we must renounce the attempt to follow the development of each separately.

Town-halls.—Industrial cities of importance were first developed in the Netherlands, where weaving flourished exceedingly. It was in these cities that those mercantile halls which were absolutely necessary to the common weal first-attained monumental development, and the Cloth-hall of Ypres, which was erected in the thirteenth century, with its massive tower, is among the most imposing secular structures of the Middle Ages. Equal to it is that of Bruges, which was executed in several divisions, beginning with the year 1284. Its tower has several times been increased in height, until it now rivals the highest cathedral-towers.

Dwellings.—Treves and Ratisbon have a series of examples which show in what manner burghers' dwellings were constructed at the close of the thirteenth and at the beginning of the fourteenth century. In Treves particularly these have that gable-façade turned toward the street which shows a continuation of the Romanesque type, and which throughout the Middle Ages was the ruling fashion in most cities. As, in order to obtain the most efficient protection, it was the rule to make the walls of the city enclose the least possible space, the streets were necessarily narrow and the sites of the separate houses very small and especially cramped in width, while the houses were carried to a great height.

On the ground-floor were the workshops, in which, under wide arched openings, as is still the case in the Orient, the master and his journeymen worked, while the customers transacted their business from the street, but, instead of workshops, the ground-floor might be the great entry-hall in which merchants' goods were loaded and unloaded, and from which a narrow staircase led to the dwelling-rooms in the upper storeys. In the

1497; the great Church of St. Michael at Hall, in Swabia, and St. George at Nördlingen date from 1427; the collegiate church at Stuttgart from 1436; while the great choir of St. Lawrence at Nuremberg, which has three aisles of equal height, was built between 1439 and 1477. St. Nicholas at Zerbst was erected between 1446 and 1488, and St. Mary at Zwickau between 1453 and 1536. Work was carried on at the Cathedral of Halberstadt in the fifteenth century, and concluded in 1490.

The works of Peter Arler at Kuttendorf (Church of St. Barbara) were also discontinued in the commencement of the fifteenth century; they were recommenced in 1483 under Master Hanus, and continued in 1499 by the celebrated Bohemian architect Raysek, who constructed the vaulting of the eastern part of the choir, which has three aisles and an apse surrounded by an aisle and crown of chapels. The western part of the choir, which has five aisles, with a gallery above the inner aisles reaching to the same height as the central aisles, was finished in the sixteenth century by Benedict von Lann. The transepts and nave remain unfinished. The rib-tracery of the vaulting is of considerable interest from the fact that it does not form straight lines, but a series of curves; so that the last constructive signification of the ribs is set aside and they are reduced to a decoration applied to the under surface of a simple self-supporting vault.

The church at Pirna was erected between 1502 and 1546; the tower of St. Mary at Esslingen was finished in 1528; in 1520-28, Master Benedict built the Church of Lann, his native city, and the construction of the Marktkirche at Halle was carried out between 1530 and 1554. With this building the construction of Gothic churches in Germany practically came to an end, though some fragments of a later date arise here and there.

Brick-construction.—The Gothic form-system as brought over from France was essentially dependent upon the building-material—a stone which could be readily cut into large blocks, each of which could be made to bear the most complicated forms. The lowlands of Northern Germany could not thus construct their works: the only natural stone existing there was granite, which occurred only in small quantities and was very difficult to work. The use of brick, which had already served in Romanesque times, essentially changed the manner of building. A system of pinnacles and tracery does not express the nature of brick, which calls for massive, smooth wall-surfaces upon which varied patterns may be formed by niches and relief-work in variously-colored glazed materials, and which may be decorated by friezes with ornamentation partly cut through, partly in flat relief, with or without glazing. This denotes, therefore, the general character of brick buildings. The massive walls, consisting chiefly of dark-colored materials, the simple lines of most of the structures, particularly of the towers, which have usually four small, low, square storeys terminated by a simple wooden spire above four gables, have quite a Romanesque character. But along with all this some entirely decorative ornaments are bound up by the employment of a great number

of cut stones which have among their surroundings an appearance in the highest degree fanciful.

Brick Churches.—The Cistercian Convent-church of Chorin, which was begun in 1273 and is without towers, is among the finest of these churches. St. Mary's at Lübeck has a massive tower and is a three-aisled structure without a transept, but with an apse and a chevet. The nave is of considerable height and has four attached chapels. This church was begun in 1276, and was for the most part constructed in the fourteenth century. The Cistercian church at Dobberan, commenced in 1291, and the Cathedral of Schwerin, founded in the commencement of the fourteenth century and vaulted in 1430, have almost exactly similar plans, with a raised middle aisle and chevet; the first is particularly distinguished by the harmony and nobility of its proportions. Similar to these is the design of the Cistercian church at Dargun, the nave of which has the double-bayed vaulting of the Romanesque period. St. Jacob's at Thorn, begun in 1309, and St. Nicholas at Stralsund, commenced in 1311, are also important. A choir with three aisles of equal height and a chevet was added to the Romanesque Cathedral of Lübeck in 1317-1341.

St. Mary's at Prenzlau—the eastern gable of which (*pl.* 34, *fig.* 2) is one of the finest works executed in brick—was built between 1325 and 1340. St. Catherine's at Lübeck and the Cathedral of Königsberg were commenced in 1335, and the magnificent Church of St. Mary at Dantzic in 1343, though the greater part of the latter was constructed in the fifteenth century. Casimir the Great commenced in 1342 the construction of St. Catherine's at Cracow, the nave of which was executed in the fifteenth century. The same king commenced in 1349 the erection of Corpus Christi at Dantzic. This church was finished in 1505; its west gable is shown in Figure 6.

The choir of St. Mary's at Cracow was built about 1360; the nave and its two towers, in the fifteenth century. The nave of St. Stephen's at Tangermünde was erected about 1376, and St. Mary's at Rostock about 1398. The churches dedicated to St. Mary at Stendal, Stargard, and Stralsund—the first completed in 1447, the last in 1460—are essentially works of the fifteenth century, as are also the magnificently-adorned Church of St. Catherine at Brandenburg (*fig.* 5) and the finer one at New Brandenburg. The beautiful cathedral at Stendal was built between 1423 and 1450, and in 1463 one of the spires was roofed with lead. The choir of St. Stephen's at Tangermünde was commenced about 1470.

Brick was not in all cases the sole building-material, but was here and there varied with stone; so that pillars, cornices, window-tracery, and other parts to which it was necessary to give characteristic forms, were of hewn stone, while the walls were of brick. By glazing the brick a means was found to bring a display of color to the assistance of the display of forms. Such is especially the case in the structures erected at Cracow by Casimir the Great.

In South Germany also there are some districts in which brick

assumes more or less importance; thus the walls of the minster at Ulm are constructed of brick, though the use of this material has no influence on the characteristic forms. Brick is also employed in a series of Bavarian edifices, as in the Church of Our Lady at Ingolstadt (1425-1439), the majestic interior of which produces an extraordinary effect of spaciousness, while the exterior, with the two diagonally-placed towers of the façade, is sober. This church has three aisles of equal height, an aisle running around the apse, and buttresses enclosed within the interior. Another brick structure is the Church of Our Lady at Munich (1468-1488), in which building the brick-construction makes its characteristic forms apparent.

To the category of brick edifices belongs also St. Martin's at Lands-hut, also a basilica with slender pillars which produce an impression of daring almost hazardous. The tower shows the peculiarities of brick-work combined with those of stone-work, and rises with a richness of details far inferior to that of the towers of Strasburg, Vienna, and Antwerp, but with remarkable slenderness, to a similarly dizzy height.

Secular Structures of the Thirteenth Century.—We have followed German ecclesiastical Gothic without a break and without a glance at contemporary secular structures, and have seen that many buildings follow closely the French manner, while others modify that manner so as to produce one specifically German, which, though regarded as a unity, is seen to be divided into various schools. Though characteristic form-development may have remained deficient in Germany, the *ensemble* of the entire group of buildings was very characteristic, and both the entire structure and the individual parts express their purpose most clearly.

The same is true of secular architecture, which, indeed, learned its form-speech from church architecture, and only introduced into it such slight modifications as were necessary to give expression to the entirely different problems, and therefore to entirely different conceptions. But in their *ensemble* these secular edifices exhibit the most thorough characterization and present an appearance which affects us so differently that we can scarcely believe that the secular structures of the thirteenth to the sixteenth century are the expression of the same popular taste that is exhibited in the churches of the same period; and yet this is the case. It but expresses the difference of purpose.

Domestic Works.—Castles, city walls, fortress-towers and gates, do not express a sublime enthusiasm. They are not hymns of praise to the Most High; in defiant solemnity they menace the approaching enemy, whom each single part is so arranged and so placed as to repel most effectually. There is also in these structures—in their massive sombreness and in the occurrence, in many places, of a variety of *motifs*—an aspect which, though by no means ideal, is yet so fascinating that untrained eyes think the entire arrangement, after the ground-plan has been designed, has been dictated completely by picturesque caprice, that the agreeable alternation of masses and openings, of low and lofty portions, shows only a satisfac-

tory artistic play of lines. This is, however, in no wise the case: the highest characterization is expressed in all this. In private structures also the spaces are regulated according to their requirements. Each window is placed exactly where need dictates and is of the exact size that need prescribes. Only when necessity is satisfied come in secondarily the artistic ideas of proportion and symmetry, which develop themselves, in a regularly axial direction, into a system of equally-balanced masses.

Fortifications had their small openings, long or wide, through which the approaching enemy could be assailed with arrows or bullets, with stones thrown down upon him, or with boiling water, without affording him the opportunity to place his scaling-ladders. Even in military architecture there is evident a development which is interesting in the highest degree, since the progress of the entire art of war, and the various kinds of assault and of defence, as well as the continued improvement of weapons, are mirrored in it. In the same manner the development of the dwelling-house expresses that of the *bourgeoisie* and the gradual entrance of the refined necessities of life into the circles of the higher classes, while the advance of the cities in importance is expressed by their Rathhäuser (town-halls). If we regard the often splendidly-decorated fountains and the hundreds of other public monuments, we must renounce the attempt to follow the development of each separately.

Town-halls.—Industrial cities of importance were first developed in the Netherlands, where weaving flourished exceedingly. It was in these cities that those mercantile halls which were absolutely necessary to the common weal first-attained monumental development, and the Cloth-hall of Ypres, which was erected in the thirteenth century, with its massive tower, is among the most imposing secular structures of the Middle Ages. Equal to it is that of Bruges, which was executed in several divisions, beginning with the year 1284. Its tower has several times been increased in height, until it now rivals the highest cathedral-towers.

Dwellings.—Treves and Ratisbon have a series of examples which show in what manner burghers' dwellings were constructed at the close of the thirteenth and at the beginning of the fourteenth century. In Treves particularly these have that gable-façade turned toward the street which shows a continuation of the Romanesque type, and which throughout the Middle Ages was the ruling fashion in most cities. As, in order to obtain the most efficient protection, it was the rule to make the walls of the city enclose the least possible space, the streets were necessarily narrow and the sites of the separate houses very small and especially cramped in width, while the houses were carried to a great height.

On the ground-floor were the workshops, in which, under wide arched openings, as is still the case in the Orient, the master and his journeymen worked, while the customers transacted their business from the street, but, instead of workshops, the ground-floor might be the great entry-hall in which merchants' goods were loaded and unloaded, and from which a narrow staircase led to the dwelling-rooms in the upper storeys. In the

dwellings of the rich a great hall situated in the first or second storey was the place where the children played, where the housewife had her store-closets, and where the elders amused themselves with drink and games when the winter's cold did not force all around the stove. Toward the street the upper storeys had windows placed close together, so as to permit all the light possible to reach the more distant rooms. The extensive attic contained also a series of storeys lighted by as many dormer-windows as possible. These rooms were partly used as bedrooms, but among the merchants served chiefly for the storage of merchandise. The narrowest and most distant rooms were situated in one or more back-buildings connected with the main structure by an open corridor on each floor. Nobles often had a high tower in connection with the house, partly as a reminiscence of the keep of the ancestral castle, indicating that the house was noble, and partly to afford the protection necessary in those unquiet times. Ratisbon especially retains a series of such towers.

Secular Structures of the Fourteenth Century.—At the beginning of the fourteenth century the prosperity and importance of the German cities had reached their climax, and monumental mercantile and town-halls multiplied. To this period belongs the oldest portion—namely, the great hall of the Rathhaus of Nuremberg and the Monumental Exchange of Mayence, erected in the reign of the emperor Lewis the Bavarian and unfortunately demolished in modern times. One of the most magnificent palaces of the Middle Ages is that of the Teutonic Order at Marienburg. The part surrounding a square court and intended to be the main building was begun in 1341. The principal part of the Rathhaus of Ratisbon belongs to the middle of the fourteenth century, and that of the Rathhaus of Prague to the reign of Charles IV. Charles's architect, Peter of Gmünd, built the great bridge over the Moldau in the last-named city, and also the strong castle of Karlstein, which the emperor destined for the reception of the crown-jewels of Germany and Bohemia, as well as of the relics which he had collected in all parts of the world. He intended this castle to be the realization of the Schloss Montsalvatch—not, indeed, from its extent, but from the costliness of the decorations, which he applied chiefly to the three chapels, the walls of which were adorned with gilding, precious stones, and enamels, while the colored mosaics of the windows were not of glass, but of transparent gems.

In 1358, Casimir the Great of Poland built the Cloth-hall of Cracow, and also rebuilt in solid stone the royal palace, which had previously been of wood. The town-hall at Bruges was commenced in 1377, and in 1382 the central castle at Marienburg, which enclosed, among others, the dwelling of the grand master of the Teutonic Order (*pl.* 35, *fig.* 2). The town-hall at Münster (*fig.* 4), those of Old and New Brandenburg, and parts of the town-halls at Lübeck, Breslau, etc., belong to the fourteenth century. The Schöne Brunnen (Beautiful Fountain) of Nuremberg was erected between 1385 and 1396, and the town-hall at Brunswick was begun in 1393. The Schlüsselfeld House at Nuremberg—which in

more recent times has without any reason been called the Nassauerhaus (*pl.* 35, *fig.* 1)—comes down to us with the forms of the fourteenth century, though it was erected in the beginning of the fifteenth, just as is the case with the beautiful choir of St. Sebald. The Hôtel de Ville of Brussels was commenced in 1401, and the tower of the Town-hall of Cologne was built 1407–1414.

Secular Structures of the Fifteenth Century.—To the beginning of the fifteenth century belong the beautifully-decorated parts of the Castle of Vajda-Hunyad, in Transylvania (*pl.* 36, *fig.* 6), the towers which defend the bridge over the Moldau at Prague (*fig.* 1), St. Paul's Gate at Basle (*fig.* 2), the Neustadt Gate (*fig.* 3), and the Town-hall of Tangermünde (*pl.* 34, *fig.* 3), also the Uenglinger Gate at Stendal (*pl.* 36, *fig.* 4). The Gürzenich Exchange at Cologne was built 1441–1474, and the cognate stone house at Frankfort-on-the-Main possibly at the same date (*pl.* 35, *fig.* 3). That jewel of Louvain, the Hôtel de Ville (*fig.* 5), which seems rather a reliquary from the hand of the goldsmith than a veritable town-hall, dates from 1448–1463, the stone house of Kuttendorf from about 1470, and that of the Castle Albrechtsburg at Meissen, in which occur later portions belonging to the sixteenth century, from 1471–1483. To the same period may probably be referred the town-halls of Basle, Ulm, and Ueberlingen; the Hôtel de Ville of Ghent (begun in 1481), which is overloaded with fanciful ornamentation, was chiefly executed in the sixteenth century, and has come down to us only as a fragment. The University of Cracow was burned in 1492, and at the close of the fifteenth century was rebuilt nearly in the style it now presents. The court is shown on Plate 34 (*fig.* 4). Probably the Florian Gate of this city (*pl.* 36, *fig.* 5) belongs to the same date.

To the close of the fifteenth century may be referred the Gothic fountains at Ulm and Basle, and a polygonal spring-house adorned externally with rich decorative architecture was erected at Kuttendorf in 1497. The Rathhaus of Breslau, as it now stands, belongs to the close of the fifteenth or the beginning of the sixteenth century (*pl.* 35, *fig.* 6), and the Town-hall of Oudenarde (*fig.* 7) was begun in 1527. Great is the number of private houses which from the end of the fifteenth and the beginning of the sixteenth century have come down to us in every part of Germany, and which present varied forms according to local customs and to the building-material. Nuremberg has some particularly beautiful examples, but the brick buildings of the North German cities of Dantzic, Wismar, Rostock; Lüneburg, Greifswald, Hanover, etc. may be put in comparison with them. In very many cities both in the North and in the South of Germany by far the greater number of the dwellings, and even the town-halls, were still of wood—that is, they consisted of a framework of carpentry, the panels of which were afterward walled up. Groups of such structures, with their projecting upper storeys and the rich carving of the red-painted woodwork, afford a most characteristic picture (*pl.* 34, *fig.* 1). (See Vol. II. pp. 257–261.)

4. FRENCH GOTHIC, FIFTEENTH CENTURY.

Church-architecture.—The magnificent churches erected in France in the thirteenth century were concluded in either the fourteenth or the fifteenth, but few were absolutely finished. The inspiration of the thirteenth century had passed away, and the belief that no church could be laid out with sufficient size and magnificence—the dislike to erect a work which could be finished at once, lest in the near future it should be taken down to make way for a more splendid one—had given place to want of zeal which did not permit the finishing of what an earlier time had commenced with the intention that subsequent ages should acquire merit by its completion. Still weaker was the desire to undertake magnificent new buildings. The old churches were now large enough and good enough. Whatever was executed in the ecclesiastical domain was inconsiderable, compared with the works of the preceding period. Characteristic forms had passed away, and conventional ornamentation, not harmony of form, had taken its place. The works of the fifteenth century may almost be called *rococo*; especially in the quality of naturalism they cannot vie with the German works, which are almost always distinguished from the French by their nobler proportions.

Secular Architecture.—But, though French architecture during the fifteenth century could not develop great works in the domain of church-building, it attained to brilliant results in that of secular structures. The fortifications of the cities had, as in Germany, to be strengthened after firearms had made untenable the entire system of defence previously used (*pl. 37, fig. 4*). Citizens' houses in the increasing and multiplying cities—partly monumental, partly constructed in wood—palaces of the nobility, hôtels de ville, and hospitals exercised the builders, and as in the preceding period scarcely a church corresponded to the original ideal, so was it now with the buildings serving for either public or private needs.

Château of Poitiers.—The rebuilding of the Castle of Poitiers, which belonged to the counts of Poitou, was commenced in 1395. The spacious hall, with its gable richly decorated both inside and out, its magnificent fireplace at the gable-end, and its flanking angle-towers, is still preserved, as is also the roof, the construction of which dates from the beginning of the fifteenth century. Dating also from the same time, there stands by its side a structure capped with machicolations, but on its side adorned with rich architectural decorations, which offer serious obstacles to the use of the warlike portions; so that the latter are to be viewed rather as reminiscences.

The Bastille at Paris, destroyed during the Revolution, was also a castle with round angle-towers, battlements, and machicolations. The Nesle Tower at Paris (*fig. 5*), which was long ago swept away, served also for military purposes. The hospital at Beaune, in Burgundy, was built in 1343, and about the middle of the century the beautiful lighthouse at La Rochelle and the belfry at Evreux. The Hôtel de Ville

of St. Quentin belongs to the fifteenth century. A richly-magnificent design of the same century is the house of Jacques Cœur, at Bourges. An extremely picturesque group of buildings surrounds a trapezium-shaped court, and has come down to our day almost uninjured; the entrance is shown in Figure 2 (*pl.* 37). A portion of the Abbey of Cluny at Paris is still preserved, and contains a museum of mediæval art-treasures (*fig.* 3.) The Palais de Justice at Rouen (*fig.* 1) has a decorative exterior. The Hôtel de la Tremouille, at Paris, which was destroyed in the present century, was a splendid structure built by Louis de la Tremouille about 1490; of its rich decoration some idea is given by the window shown in Figure 7.

Citizens' residences of wood, such as exist in Germany, also remain in France in considerable abundance. Quite a number constructed at the close of the fifteenth century were destroyed in Paris a few years since. Many still exist at Rouen, and among them the Abbot's House of St. Amand is distinguished by its extraordinary wealth of carvings. Houses of this kind exist also in Rheims and other cities. At St. Antonin, in Tarn-et-Garonne, two fireplaces of the fifteenth century are still preserved.

Two highly-original structures are the great pigeon-houses at Creteil and Nesle; but we should not leave unmentioned the palace of the grand duke of Lorraine at Nancy, Château Meillant, near St. Amand, built about 1500, or the contemporary Château Josselin, in Brittany, a window of which is shown in Figure 6. Louis XII. built the charming *Chambre des Comptes* at the Palais Royal at Paris, the elegant-roofed open staircase of which was greatly admired. The Châteaux of Creil and Chantilly belong to the fifteenth and sixteenth centuries. The Châteaux of Verger, in Anjou, and Bury, near Blois, as well as the Hôtel Bourgherould, at Rouen, conduct us already into the Renaissance.

5. SPANISH GOTHIC.

The Iberian peninsula, which borrowed the Romanesque style willingly from France, afterward took with equal alacrity the Gothic also from its neighbor. Burgos Cathedral, commenced in 1221, has a choir laid out in the French manner with an aisle and five chapels. The Cathedral of Toledo, commenced in 1227, has five aisles, with a double aisle around the choir, as in the Cathedral of Paris. The upper part of the structure, with its triforium, resembles internally the French cathedrals, though mixed in some places with reminiscences of the Moorish style. The Cistercian Church of Las Huelgas, near Burgos, erected in the forms of the thirteenth century, has a polygonally-terminated choir with four small side-choirs, also ending polygonally.¹

The conventual church at Batalha, also of the thirteenth century, has a similar plan; to a three-aisled nave are attached a one-aisled transept and five parallel choirs with polygonal ends, the central one rather wider

¹ Part of this building has Romanesque details and is evidently older.—Ed.

than the side ones. The Cathedral of Leon, begun in 1250, has a three-aisled nave and a choir ending in the French chevet. The slenderness of the architectural system was such that stability was sacrificed, and soon after its construction a part of the openings had to be walled up; so that it has recently been found necessary to take down and rebuild a large portion of the edifice. The Cathedral of Avila is Gothic with a Romanesque arrangement, and that of Valencia, begun in 1262, has two chapels attached to each side of the polygonal aisle around the apse. The principal part of the Cathedral of Avila was executed in the beginning of the fourteenth century.

Barcelona Cathedral, begun in 1298, for the most part built in the first half of the fourteenth century, but with parts reaching into the fifteenth, has in many respects emancipated itself from the French system. The details, indeed, are completely based upon it, but it has, as is the case in Italy, widely-spaced and proportionally slender piers, and side-aisles carried up so high that only small openings remain to admit light into the middle aisle. Each bay of the nave on both sides has two polygonal chapels between the buttresses.

The choir of the Cathedral of Gerona, commenced in 1312 and completed in 1346, has an apsidal aisle and nine chapels, and the collegiate Church of Manresa, commenced in 1328, has seven square chapels around the apsidal aisle. Santa Maria del Mar (1328-1383) at Barcelona has a middle aisle roofed with four square vaults of about 12 metres (40 feet) span, and Sta. Maria del Pino and St. Just y Pastor of the same city have only one aisle, with a vault of even wider span. The middle aisle of the Cathedral of Palma in Majorca is nearly 20 metres (65 feet) wide, and consists of eight bays, to each of which, on either side, is attached a polygonal chapel. These chapels are somewhat larger than the polygonal choirs which close the side-aisles toward the east, while a principal choir of entirely German plan terminates the middle aisle and has at its eastern polygonal end a small polygonally-terminated chapel of several bays. The single transept of Valencia Cathedral dates from 1350, the Church of St. Giles at Burgos is of the fourteenth century, and the bell-tower of Valencia Cathedral was built 1381-1418. The cathedral at Oviedo was commenced in 1388.

Seville Cathedral, commenced in 1403, has five aisles and a series of chapels also on each side; the middle aisle is but slightly higher than the side-aisles. The cathedral at Pamplona, commenced in 1397, has a French arrangement of the choir and is chiefly a work of the fifteenth century. St. Pablo at Burgos was built 1415-1435, and in 1416 the nave of the Cathedral of Gerona was added to the choir. This nave consists of a single aisle with a widespreading vault as wide as the three aisles of the choir adjoining it, and is spanned by four fine groined vaults, to each side of which two polygonal chapels are attached. The façade of the cathedral at Toledo dates from 1418-1479; in 1441 the Cathedral of Astorga, which has three simple parallel choirs and two western towers, was com-

menced; the towers of Burgos Cathedral were erected between 1442 and 1456;¹ the vaulting of the Barcelona Cathedral was finished in 1448; the Church of El Paral at Segovia was begun in 1459; the splendid octangular chapel at the head of the choir of Burgos Cathedral dates from 1487; San Juan de los Reyes at Toledo was begun in 1476; the Cartusa at Miraflores was finished in 1488, and in 1499, San Benito at Valladolid, which has radiating groining, was commenced. The Cathedral of Huesca belongs to the fifteenth century; that of Salamanca was erected between 1510 and 1560, and that of Segovia was begun in 1522. The Mausoleum of King Manuel, attached to the conventual church of Batalha, follows the type of the circular churches and is decorated in a fantastic manner. The equally fanciful conventual church at Belem belongs also to the sixteenth century. The cupola and the transept of Burgos Cathedral were executed previous to 1567.

Secular Buildings.—The evolution of the Spanish secular edifices of this period is most interesting. Arabian survivals and borrowed Northern forms compose the designs for dwelling-houses and palaces intended for Southern habits, and the serious is in them mingled with the gay in the most agreeable manner, while structures erected for military purposes were made less severe by an abundance of decorations. We may mention the Puerta de Serranos at Valencia (1349); the Casa Consistorial at Barcelona (1369–1378), which has a great hall; the Casa de la Disputacion, and the Audiencia, with arcades of several storeys and a great open staircase in the court (*pl.* 39, *fig.* 6), as well as the Puerta del Cuarte at Valencia (1444) and the Casa Lonja, which was begun in 1482.

6. ITALIAN GOTHIC.

Course of Development.—The circumstances under which Architecture developed in Italy from the thirteenth to the fifteenth century were entirely different from those of Northern Europe (and even of Spain, where Northern influences predominated), and Northern Gothic found little acceptance in Italy. That Architecture here had different tasks to perform was due both to circumstances and to the course of Italian culture, which more than in the North induced a predominant consideration of that which is agreeable to the eye. The people, because of their greater sensibility, superior culture, and critical taste, found their æsthetic ideal in a direction different from that in which it was sought by the North. The striving after spaciousness, the penchant—based upon nature—for magnificent arrangements of lines, found no pleasure in the severity of an Architecture based upon construction, nor in the slender lines evolved by the school-system of the later Gothic, suitable for the meagre light of the Northern heavens. Still less could Italian eyes tolerate the mad freaks of the Gothic of the fifteenth century. There were, indeed, desultory attempts made at various times to introduce the Northern style into Italy,

¹ These towers, of open tracery like Freiburg, are attributed to a German, Juan or Johan of Cologne.—ED.

but the edifices which resulted from these attempts did not lead to the formation of schools through which these traditions could be continued. On the contrary, a peculiar Italian school was formed which scarcely had more in common with the Northern school than the frequently-recurring pointed arch and the reminders of the gables and canopies; which school, however, even in these modifications, was by no means able to repress the influence of the older local schools.

Church-architecture.—As the basis of the system of church-architecture we find a dome around which choir and transepts are variously combined, while toward the west a three-aisled nave is added, to which sometimes a series of quadrangular chapels is attached on either side. The middle aisle is usually only slightly higher than the side-aisles, so that the vaulting is lighted only by small round windows. The piers are slender and widely spaced. What the German system of church-construction attempted with the *Hallenkirche* arrangement is here put in practice in a much higher degree. Buttresses have but little importance; flying-buttresses are nearly unknown.

The full Italian daylight must be admitted only by a few small windows if that mystical impression which is identical with the conception of a Christian church was to be produced. To this end the wall-surfaces assumed greater importance; so that in the interior the universal adornment of wall-painting, which had taken the place of the older mosaic, might find unlimited application, while upon the outside the varied colors of costly materials enlivened the surfaces. Above the façade, whenever the system was carried out in its entirety, three immense gables rose in front of the flat roofs behind them—a decorative screen placed before the façade. The union of the tower with the church is discarded and a simple square bell-tower or campanile is erected near the church as an entirely separate structure, or at the most is inserted in an angle contrary to the plan. The magnificent arrangement of the French choir with its wreath of chapels found even less acceptance in Italy than in England or Germany. Where there were not three equal cross-arms spreading outward from the cupola the simple apse remained in force.

Transitional Style.—We left the development of Italian architecture upon the confines of the twelfth and thirteenth centuries, and showed what were the differences and what the resemblances between it and the German Romanesque (p. 163 *sq.*). A transition style was developed partly under direct French influence—partly, perhaps, even under that of Germany as long as the emperor exercised political power in Italy. In this style the distinguishing qualities of the Italian architecture were not entirely ignored.

The nave of the Cathedral of Parma belongs to this transitional style. Here the original double-bayed arrangement of the vaults was abandoned; so that each double bay is covered with two equal oblong groined vaults. The Cathedral at Piacenza also, commenced in 1122, was chiefly executed in the thirteenth century, and finished in 1233. The middle aisle of the

nave is covered with hexapartite vaulting, and has thus the character of a Northern church of the transitional period. The Cathedral of Trent, commenced in 1212, is even by its site distinguished as midway between Italian and German architecture. A still greater proportion of Gothic elements appears in the frequently-altered Cathedral of Asti, in the Church of Santa Maria di Costello at Alessandria, and in San Andrea at Vercelli, begun in 1219. San Francesco at Assisi was commenced in 1228 by Jacob, a German master; it was consecrated in 1253, and must be considered as Gothic, yet with the wall-surfaces conspicuously prominent. Here there are two churches, one over the other, the lower round-arched, while the upper has one aisle with wide-springing groining carried on clustered pillars. Notwithstanding its disproportionate lowness, it produces an impression of space and freedom. The outer wall is set back a little below the springing of the vaulting; so that the broad wall-ribs of the groining enclose deep niches which are united to one another by apertures in the piers.

San Antonio of Padua almost entirely renounces all Gothic *motifs*. This church was laid out in the fourth decade of the century, and about 1256 the works were first earnestly prosecuted. The relics of the saint were brought to the church in 1263, and in 1307 the structure was completed by Fra Jacopo of Pola. It was restored in the fifteenth century, after it had been seriously damaged by lightning in 1394. The cupola over the choir was erected in 1424. St. Mark's at Venice doubtless furnished the idea of the plan, since the church has six cupolas arranged so as to form a cross, two of them composing the nave, in which position St. Mark's has but one. Throughout the whole church the round arch predominates over the pointed. The entire construction, leaving free development to the side-aisles, as in St. Mark's, is Romanesque, yet of the greatest simplicity; so that the *ensemble* is nowhere influenced by the detail. The choir with its chevet of nine square chapels shows a later foreign ingredient, but is French only in the arrangement, not in the details. Sta. Trinità at Florence, built about 1250, has five aisles, and may be considered as a Gothic edifice.

Siena Cathedral, begun in the middle of the thirteenth century, has a nave with round arches and semicircular vaulting. The interior architecture is in a sense Northern, yet the effect, through the employment of alternate courses of light and dark marble, is essentially different. The cupola was completed in 1264. The splendid façade was commenced by Giovanni Pisano in 1284, and has three large and richly-decorated gables separated by pinnacles and placed above three round-arched portals surmounted by gables. The central gable, above a rose-window opening into the nave, rises above the side-gables. In 1317 the choir was enlarged toward the east in a manner corresponding to the nave.

Sta. Maria dei Frari at Venice was begun about 1250, but was completed in the next century. The construction of Arezzo Cathedral was commenced in 1277, and Giovanni Pisano built the famous Campo Santo

at Pisa between 1278 and 1283; he also directed the enlargement of the cathedral at Prato.

With the rule of Charles of Anjou in Southern Italy, in the seventh decade of the thirteenth century, the Northern Gothic style was firmly established by French architects, and thus the Grotto-church of S. Angelo on Mount Gargano, the Cistercian church at Casamara, and Sta. Maria d'Arbona are Gothic. The cathedrals of Acerenza and Aversa have the French chevet, as have also the convents of Sta. Trinità at Vinosa and S. Lorenzo Maggiore at Naples. The cathedral of the latter city is unvaulted.

The Dominican Church of Sta. Maria Novella at Florence was begun in 1278, and Sta. Anastasia at Verona in 1290. The latter has slender round pillars and a transept with five apses, the central and largest corresponding to the middle aisle. The Cathedral of Orvieto, the middle aisle of which is unvaulted, was begun in 1290; its façade (*pl.* 38, *fig.* 5) may be considered as the purest expression of Italian Gothic. The magnificent Franciscan Church of Sta. Croce at Florence, commenced in 1294 by Arnolfo di Cambio, is also unvaulted.

Florence Cathedral.—Arnolfo di Cambio commenced in 1294 the cathedral at Florence, by the erection of which the republic intended not only to honor God and the Blessed Virgin, but also to leave to posterity a monument of its might and magnificence; the architect was therefore directed to surpass everything that Architecture had hitherto accomplished. The ground-plan (*fig.* 3) shows the arrangement chosen by him. The magnificent decoration of exterior and interior has made out of the grandly-conceived design a veritable work of ornament. After the death of Arnolfo, in the beginning of the fourteenth century, Giotto undertook the superintendence, and in 1332 began the façade, which was never finished, and the part which he had erected was afterward demolished.

Lucca Cathedral was begun in 1308—not, indeed, with the great dimensions of that at Florence, but it shows the development from Romanesque to the architectural forms of the first half of the fourteenth century. In 1334, Giotto constructed the campanile near the Duomo of Florence (*fig.* 4). Between 1336 and 1340 the grain-market (*Mercato de' Grani*) at Florence, built in 1308, was converted into the Church Or San Michele, which alteration was completed by the erection of the magnificent altar, the work of Orcagna, shown in Figure 6. The baptistery at Pistoja (S. Giovanni Battista) was erected by Cellino di Nese in 1339, and in 1340 Niccolò di Cecco built the campanile of the cathedral at Prato. To the second half of the fourteenth and to the fifteenth century belongs SS. Giovanni e Paolo at Venice.

The Duomo at Milan was founded by Gian Galeazzo Visconti in 1386, and was under the direction of several foreign architects, especially of Heinrich von Gmünd, who began it in 1386, and of Johann von Grätz, who continued it at a later date. The nave has five aisles, the transept three, the choir three with an aisle around the apse and chapels of two

bays each outside the outermost aisle. The ground-plan (*pl.* 38, *fig.* 1) brings to mind Northern edifices rather than Italian ones, yet the great dimensions and the want of a tower betray the nationality. The superstructure has, indeed, its traceried windows; the pinnacles, the pendants, and the Northern ground-plan cannot be denied; yet the buttresses have not the importance they assume in the North, and the slight pitch of the roof, the trifling difference between the height of the central and that of the side aisle, and lastly the details, which are often bizarre and always mistakenly applied, prove that the influence of the German masters did not penetrate deeply.

Notwithstanding the caricaturing of the Northern system and the verging upon barbaric misunderstanding of the details, this building produces a more than picturesquely beautiful impression through its noble material, its careful workmanship, its vast dimensions, its good proportions, and the richness and elegance of its parts. Aside from the things which have no influence on the arrangement as a whole, nobility and a fine artistic sense are so imprinted upon the grouping of the structure that it is not without admiration that one for the first time sees these pure white masses with their beautifully-varying shadows rise against the deep-blue Italian sky (*fig.* 2).

S. Petronio at Bologna.—One of the most grandly-conceived churches of Italy, though one which is not entirely finished, is S. Petronio at Bologna, begun in 1390 by Antonio of Vicenza. This has a magnificent octangular cupola surrounded by four massive three-aisled halls, each with an elevated middle aisle. A row of chapels is added on each side, and the vaulting is so arranged that that of the middle aisle is square, while that of the side-aisles is oblong and of half the span. Each bay of the side-aisles has two chapels lower than the side-aisles, to the upper part of which light is admitted by a small round window above the chapels, while a similar round window lights the middle aisle.

Certosa di Pavia.—The same Gian Galeazzo Visconti that founded the Cathedral of Milan founded in 1396 the magnificent Certosa at Pavia, which was finished in the course of the fifteenth century. The round arch was again introduced, and to a great extent recalls the later Romanesque structures of the North, but the arrangement of the spaces follows the system of S. Petronio at Bologna; the middle aisle has but little advantage in height over the side-aisles, and rows of lower chapels adjoin the latter. The late Romanesque of the North is recalled chiefly by the clustered pillars and the hexapartite vaulting of the middle aisle. The exterior has Romanesque galleries.

Como Cathedral was also commenced in 1396. Continued in the fifteenth century, this edifice passes into the Renaissance. Sta. Maria del Carmine at Piacenza follows a system similar to that of the Certosa at Pavia, while the nave of Sta. Maria delle Grazie at Milan has not such widely-spaced pillars; so that the vaulting of the side-aisles is nearly square, and only one square chapel corresponds to a single bay.

Gothic in Sicily.—Moorish reminiscences predominated in Sicily during the Gothic period, as in the Cathedral of Palermo, which during the fourteenth and fifteenth centuries received various additions. Sta. Maria degli Angeli at Palermo, begun in 1430, has the semicircular arch throughout. In general, the Gothic style lasted longer in Sicily than in the rest of Italy, since it continued into the sixteenth century.

Decorative Works of Art.—The great churches of Italy are filled with decorative works of all kinds—altars, pulpits, tombs, credences, and stalls—which exhibit the decorative style of Italian architecture still more charmingly than it is evidenced by the large edifices. The pulpits of Pisa (1260), Siena (1266), and Pistoja (1301) bear yet a Romanesque character. The tomb of Pope Benedict XI., at Perugia, has the pointed arch; others exhibit the round arch. We have already spoken (p. 232) of the altar of Or San Michele (*pl.* 38, *fig.* 6). The tombs of the Scaligers at Verona, which form a group in an open square, have a most fanciful effect. The richest of this group, a hexagonal edifice, is shown in Figure 7.

Secular Buildings.—The Italian cities have a great number of secular buildings which testify to the might and importance of these republics as well as to the wealth and fine taste of their inhabitants, and also, especially in early times, to their defiant character and to the wars between the cities. Until the thirteenth century every house was a strong castle calculated for defence against a threatened assault; at the close of the thirteenth and in the fourteenth century battlements everywhere remain as reminders; and whenever colonnades and rows of windows open outwardly, the battlements of the edifice assume a castellated character.

Palaces and Castles.—Among the oldest secular Gothic structures are the Palazzo Pubblico at Cremona, commenced in 1245, and the Palazzo Guinigi at Lucca. Perugia has a decoratively adorned fountain of 1280 and a Palazzo Comunale begun in 1281. The Palazzo Comunale at Piacenza (*pl.* 39, *fig.* 2) was also commenced in 1281; the Palazzo dei Giureconsulti, at Cremona, in 1292; the Broletto at Monza in 1293; at probably about the same date the Broletto at Como and the palace of the podestà at Orvieto; while the Palazzo Comunale of Pistoja was begun in 1295. Arnolfo, the architect of the Duomo, commenced the Palazzo Vecchio at Florence in 1298, and proved himself a master in secular as well as in ecclesiastical art, producing a work the defiant severity of which, as well as the boldness of the construction, is at once imposing and surprising (*fig.* 1). The Palazzo Pubblico at Siena and the Palazzo Buonsignori (*fig.* 3) show a related style. Some fountain-porticoes at Siena have also great interest. The construction of the Loggia dei Osii at Milan was begun in 1316.

The castle of the Visconti at Pavia belongs to the beginning of the fourteenth century, as do also that at Mantua and that of the Scaligers at Verona; the Palazzo della Ragione at Ferrara was built in 1326. The Palazzo della Ragione at Padua is remarkable for the vast size of its tun-

nel-vaulted halls, yet, notwithstanding its Romanesque features, it is a work of this period. The Broletto at Bergamo and the Loggia dei Mercanti at Bologna bear the character of the fourteenth century.

Public Buildings.—The Town-hall of Gubbio dates from 1342-1346; in 1345, Agnolo Gaddi commenced the erection of the Bargello, the palace of the podestà, at Florence; Orcagna began the Loggia dei Lanzi at Florence in 1376; an imitation of it at Siena called the Loggia degli Ufficiali dates from 1417. The Ospedale Maggiore, at Milan, begun in 1456, exhibits in the rich decoration even of its oldest parts many resemblances to Renaissance motives, as is also the case with the Albergo del Orso at Rome.

Venetian Palaces.—An entirely peculiar and fancifully Oriental gracefulness is exhibited by the *palazzi* of Venice. Here no reminiscences of fortress-construction had to be overcome. The republic had no parties, nor did it tolerate the opposition of individuals within it. All the citizens were compelled to live in peace and obedience to the government, every house must be always open, and the government must know what might be seen and done in each. On the absolute power of the government depended the greatness of the state and the riches and fortunate conditions of the individuals the splendor of whose surroundings and the frankness of whose lives are displayed in the architecture of Venice. Open halls and loggias in the various storeys mirror themselves in the canals—even in the earlier period this system had developed, though with greater simplicity and massiveness—and now it unfolded itself with a splendor which was possible only under the force of the continuous impressions brought about by uninterrupted relations with the Orient and its fantastic magnificence.

The Palazzo Ducale.—The Doge's Palace, the arcades of which, in two superimposed storeys, belong to the fourteenth century, is the grandest work in this direction. These arcades extend along the west and south sides of the palace, and are composed of a series of richly-decorated columns (thirty-six below and seventy-one above) with pointed vaulting. A later addition is the massive wall borne above the arcades. This portion is enlivened by patterns in marbles of various colors, yet it severely burdens the slender columns below (*pl.* 39, *fig.* 5). Other palaces, most of them of the fifteenth century, are the Giovannelli (*fig.* 4), Foscari, Pisani, Cà d'Oro, etc. Similar buildings were also erected in the portions of the coast subject to the Republic.

Fountains.—Peculiar interest attaches to the fountains of Venice—wells in which the rain-water was collected. While in the previous period these had almost the character of a font (*fig.* 8), in this they have that of the capital of a column, and here and there may be seen such capitals altered for the purpose, while certain others (*figs.* 9 10), were made in this form; these, in connection with the capitals (*figs.* 7, 11, 12), offer speaking examples of the methods of ornamentation displayed by the late Italian Gothic.

VI. RENAISSANCE ARCHITECTURE.

I. ITALIAN RENAISSANCE.

When French Gothic had reached its highest development; when Germany no longer borrowed, altered, and worked single elements into her native art, but adopted the foreign forms in their entirety and treated them as necessity required,—then the outward form ceased to be regarded as an essential practical result of the impulse and sway of the inward forces, and was considered as entirely independent, as modelled purely after an outward foreign ideal. It was not only in the domain of Architecture that this was the case: it was also evident in all departments of life. The empire had lost its importance, and had become a form for which the outward scheme alone was definitely established: feudalism had lost its significance: it was no longer based on unlimited fealty and devotion the recompense for which was the possession of a fief, but the vassals considered their fiefs as a property loaded with burdens. They longed for the diminution of these burdens, and in an order of things arranged according to the most precise formulas regarded the outward forms alone, since all things must have their forms.

Chivalry and the chivalric spirit, which once permeated all conditions of life and everywhere moulded those conditions as the inward impulse gave them shape, had itself become a mere formalism which had established a conventional scheme and developed it to an artistic height—which retained all imaginable excrescences, but which had nothing in common with the original spirit. Since all that appeared outwardly had thus become mere form and was only respected and retained power as such, it necessarily depended upon the will of the influential classes to choose what forms should be established, what they should allow to be considered an authority.

The expression that the form was no longer the result of the inwardly-impelling forces must not be misunderstood. How the phrase should be taken is shown by the history of development before given, and by the reflections connected therewith (p. 194). It was no longer the inward-working physical forces that determined the form, but abstract considerations lying in popular ideas, which under the guidance of the sense of outward beauty gave an ideal differing from that which was the outcome of construction and of the display of the forces at work in construction. This direct influence of popular ideas upon the development of forms had firmly woven each Gothic form-system into a scholastic harmony, and had, as the influence of the popular spirit proceeded no longer from individual classes, but from all grades, directly wrought out that mannerism—in a sense, realistic—which gave to the later German Gothic so entirely the character of the German *bourgeoisie*, and to the English that of the English people.

As in Italy the way had been led toward the search for a form-system which should correspond with popular taste, the general environment

there was of a nature to lead the thought in the direction of the antique classical period. In Italy mankind lived among the works of a grand past, and in their contemplation imbibed that freedom of ideas which was sought by the popular spirit, but which was not founded upon a sentiment of the purest intimacy with and deepest piety toward the traditions and decrees of the Church, as was the case in the North, and especially in Germany. In all directions Italy had made the spirit of classical antiquity its own. As far as was possible under the circumstances the philosophers, poets, and prose-writers of the older time formed the reading and ruled the productions of the literature both in spirit and in form. The Italians had the opportunity, when the creations of their writers were not consonant with the buildings of antiquity, to examine the numerous extant antique edifices still more or less intact. The equals of these structures had been destroyed in the earlier centuries, because by this means only could convenient columns and other adaptable portions of buildings be procured for the construction of new edifices, and thus the practice of Architecture had remained in steadfast relationship to the antique.

That which in Germany and the rest of the North led to the vagaries of Late Gothic led in Italy to the conscious re-adoption of antique forms, since the Italian people readily took up the antique spirit. Not, indeed, the entire people, for a culture which depends upon elements that can be transmitted only through knowledge can never reach the entire people directly; as soon as learning attains to actual importance in the culture-life of a people, that people no longer stand on a common level of culture, and the feelings and tastes which are active in the circle into which learning penetrates are not identical with those which are active in the circle from which it is absent.

Inception of the New Style.—It may have been hard to point out in the chain of French architectural development the first link that can be called "Gothic," while its predecessor must be styled "Romanesque;" but it is as impossible to designate the first "Renaissance" structure in Italian architectural development. Survivals of the antique had always remained in Italian architecture, brought about by the employment of antique fragments and by the direct impressiveness of the grand art-monuments that still remained. We can therefore only say that at the commencement of the fifteenth century the eye turned in a most comprehensive manner to the remains of the antique.

Works of Brunelleschi: Florence Cathedral.—The Florentine Filippo Brunelleschi has been designated the founder of the new style, since he first systematically labored to understand the Roman structures and consciously applied his studies. The cathedral at Florence had remained uncompleted until 1420, when Brunelleschi was entrusted with the execution of the dome according to a new design by which he proved himself a skilful constructor, even though the groundwork of the new style does not appear very distinctly in this part of his work. Brunelleschi had to

adapt his project to the existing part of the work, and this he did in such a manner that the cupola towers in harmonious proportions out of the cross (*pl.* 41, *fig.* 1); but the decoration of the exterior, and also the lantern, were after his death completed by Giuliano da Majano in 1461. Apart from the technical idea of the construction—which, in fact, is extremely ingenious—it was only the artistic idea of Brunelleschi to allow the vaulted form of the dome to appear externally, thus going back to such ancient models as the Pantheon and Sta. Sophia, that could have distinguished his project from the unknown projects of Arnolfo and Giotto.

The Dome.—Oragna had already made use of the dome in the altar of Or San Michele; and in the wall-paintings and miniatures of the Middle Ages, even in the North, the display of cupola-shaped roofs is not infrequent and baldachins of stone had brought this form into application. St. Mark's at Venice, S. Antonio at Padua, the baptistery at Pisa (the upper part of which is adorned with Gothic ornament), the cupola of Siena Cathedral, etc., show that this idea was not absent from the mediæval architecture of Italy—that probably Arnolfo had already prepared something similar, but that when the time for execution came Brunelleschi was a man who technically as well as artistically could put it into practice. In 1425, Brunelleschi built S. Lorenzo at Florence, a columned basilica with groined side-aisles and niche-like chapels. Here a decoration in antique fashion, with pilasters and cornices, is employed, and the antique fragment of an entablature is again set upon the columns; a cupola rises over the intersection and the choir has a square end. S. Spirito is built similarly after Brunelleschi's plans; here the side-aisles with their rows of chapels are continued around the transept and square-ended choir. The small Cappella de' Pazzi, in the Convent of Sta. Croce—a Greek cross with barrelled vaults and a cupola, the walls adorned with Corinthian pilasters—goes still farther back toward an antique model (SS. Nazario e Celso at Ravenna).

The Abbey of Fiesole, which Cosimo de' Medici commissioned Brunelleschi to build, has the same arrangement in its church. The open loggia in the pleasant court, the refectory, etc., form a picture which presents the greatest possible contrast to the German conventual structures of the same date, but bears a close resemblance to those of Italy, though it allows the conscious borrowing from antique elements to be more conspicuous than they are in allied structures of the same date; yet it does not fully correspond in its entire design to the antique spirit, nor do its ornate details aspire to the grand solemnity of the antique.

It is the pleasure-loving Italian of the fifteenth century, not the proud, world-ruling Roman, that we now encounter. There is of the ecclesiastical spirit only so much as is necessary to satisfy ecclesiastical demands and to give the pretext for a building which must be used as a place of devotion; all besides breathes of free, joyous life and worldly pleasure. The portico of the foundling hospital near the Annunziata at Florence is a work of the same master; here the arches rise from stout Corinthian col-

umns without an entablature, while the spandrels are adorned with medallions containing figures of infants. An upper storey has small windows surmounted by gablets.

Palazzo Pitti.—The magnificent Palazzo Pitti, erected by Brunelleschi, has the severe castellated character of the mediæval Italian palaces, without any reminiscences of military art. It has attained this result through the severity of its proportions—its great wall-masses and their treatment with bosses of unhewn stone. During the Middle Ages many works whose severe significance excluded decoration—or, at least, made it superfluous—had their masonry carefully worked upon the angles only, while the surfaces were left as they came from the quarry, or, at most, were superficially dressed, by which means the severity of aspect was considerably increased. Brunelleschi, wishing to profit by this impression, by regular workmanship formed this mode of treatment into an artistic system. Thus the Pitti Palace rises almost without adornment; the ground-floor has, besides the grand portals, only small rectangular windows, placed high up, while the two upper storeys have windows $3\frac{1}{2}$ metres (11 feet) in width and 6 metres (20 feet) in height. Subsequently two lower side-wings were built; the court was added by Bartolommeo Ammanati almost one hundred years later.

Palazzo Quaratesi.—In the Palazzo Quaratesi, Brunelleschi has divided his arched windows by a central column and two small arches, and has adorned the spandrel under the great arch with medallions; he has thus shown that he did not disdain mediæval *motifs* when they seemed appropriate to produce the designed artistic impression. However great a technician he may have been, he yet aimed at outward effect in his structures; but the constructive element asserts itself more externally than in the Gothic decorative structures of Italy, and the adoption of antique decorative forms contributed not unessentially to this end, since they, as he employed them, enlivened the masses, but were nowhere so prominent as to dominate the character of the building. He also knew how in the most delicate manner to dispose the dimensions and proportions of the decorations to the entire edifice, to moderate the heaviness prevalent in the period of the Roman Empire, and particularly to give delicacy and refinement to the ornament.

Brunelleschi School of Architecture.—Brunelleschi formed in Florence a school to which we are indebted for a number of palaces, porticos, cloisters, and chapels. A chief characteristic of this school is the treatment of the Corinthian capitals, which are adorned with dolphins above the acanthus-leaves in place of the volutes, the rolled-up tails supporting the angles of the abacus. Other masters took up and disseminated the new style; thus, in 1443, the Milanese Pietro di Martino employed it in the construction of the triumphal Arch of King Alfonso at Naples.

Works of Alberti.—After Brunelleschi's death the next worker in his style at Florence was Leon Battista Alberti. He restored the Gothic interior of S. Francesco at Rimini in 1447-1450, rebuilt the end of the choir

of Sta. Annunziata at Florence in 1451, and in 1460 erected the Palazzo Rucellai, having three storeys decorated with pilasters, between which there are rusticated wall-surfaces, while the arched windows of the two upper storeys are divided by columns with remains of Gothic tracery above them.

The Influence of the Florentine School extended beyond the walls of the city and filled all Tuscany. In 1460, Francesco di Giorgio began at Siena the Palazzo Piccolomini, one of the most splendid to be found in Tuscany, that land so rich in palaces; the Piccolomini is nearly allied to the newer Palazzo Strozzi at Florence, soon to be mentioned. About the same period a series of buildings were erected by Florentine masters at Pienza, which was founded by Pope Pius II. in 1460. Among these were the cathedral—a *Halienkirche* with three equal aisles and vaults resting on clustered pillars, a polygonal choir-end, and a gable-façade, completely according to ancient ecclesiastical architectural traditions—the Palazzo Pubblico, and the Palazzo Piccolomini, built for the pope himself, and closely related to the pattern of the Palazzo Rucellai at Florence.

In 1461, Agostino di Guccio erected the Oratorio S. Bernardino at Perugia. In 1456, Filarete commenced the hospital (Ospedale Maggiore) at Milan, in which the rich decoration of the Renaissance is woven into the Gothic system; yet the elements of the two distinct styles stand out in striking contrast. In the same year Michelozzo executed the adornment of a palace in Milan which Francesco Sforza had presented to Cosimo de' Medici; in 1462 he erected the Cappella Portinari in S. Eustorgio after the pattern of Brunelleschi's Cappella de' Pazzi at Florence, and also the choir, chapter-house, and sacristy of S. Pietro in Gessate. He also built the Palazzo Riccardi at Florence.

The ducal palace at Urbino was commenced in 1468 by Luciano Laurano, and Baccio Pintelli superintended it from 1484 to 1491. In 1472, Alberti built the façade of Sta. Maria Novella at Florence, and in the same year he commenced the erection of the magnificent Church of S. Andrea at Mantua. The Palazzi Spanuochi and Nerucci at Siena are ascribed to Francesco di Giorgio.

The Sistine Chapel in the Vatican at Rome, known rather from its paintings than from its simple architecture, was built in 1473 by Baccio Pintelli for Pope Sixtus IV.

Certosa di Pavia.—In the same year Ambrogio Borgognone began the façade of the Certosa at Pavia, in which the greatest richness of forms is combined with a wealth of sculptured figures and ornamental carving; so that the entire work, executed in white marble, makes a most striking impression, although the upper termination of the façade is wanting. The cloisters also, which surround the court as light, open porticoes, are filled to overflowing with charming ornaments (*pl.* 40, *figs.* 1, 2, 3, 8).

San Maria in Vado at Ferrara, a columned basilica, was begun in 1473 by Bartolommeo Tristano. The nave and transepts of this church have a flat roof, while the side-aisles and the chapels of the transepts have

groined vaulting, and a rather flat dome rises over the intersection. Biagio Rosetti finished the structure.

The grand tomb of the doge Andrea Vendramin (*pl.* 40, *fig.* 7) is in the Church of SS. Giovanni e Paolo at Venice. This ornamental structure covers an extensive surface, and may be reckoned one of the most beautiful examples of the tombs of the period. Adjoining the church is the rich façade (1485) of the Scuola di S. Marco (*pl.* 42, *fig.* 3). The façade of the Cappella Colleoni at Bergamo belongs to the year 1476.

Bramante.—About this period Donato Lazzari, called "Bramante of Urbino," came to Milan, where he remained until the close of the century, and soon became known as one of the first masters of the time. One of his oldest works is the choir of Sta. Maria delle Grazie, of whose nave—a simple Gothic work—we have already spoken (p. 233). The charming cupola, the diameter of which is equal to the width of the three aisles, does not seem adapted to the original plan (*fig.* 1).

About this time the Renaissance also forced its way into Venice. S. Zaccaria was commenced in 1457, but its system is entirely mediæval, while its Renaissance forms are rather exaggerated; so that their workmanship may well be of a later date, since the building was completed in 1515, but the façade (*pl.* 40, *fig.* 6) may perhaps belong to the eighth or ninth decade of the fifteenth century. In 1477 the court of the Palazzo Ducale was begun by Antonio Bregno, who in one storey combined the pointed arch with the Renaissance constructional forms and mouldings (*fig.* 10). The staircase (*pl.* 42, *fig.* 2) belongs to this part of the structure.

About 1480 a Tuscan architect built the arcades of the old Procurazie at Venice, and in 1481 Pietro Lombardo erected the Palazzo Vendramin-Calergi (*fig.* 5). In the same year this master built the Church of Sta. Maria de' Miracoli, whose nave has a coffered wooden tunnel-vault. The covering of marble slabs which characterizes Venetian architecture generally is displayed with great elegance in the façade of this church. About 1483, Moro Lombardo and Sebastiano da Lugano directed the construction of the domed Church of S. Giovanni Crisostomo, which is nearly square and has the lower portions round the dome tunnel-vaulted. In 1484, Giuliano da Majano built the Porta Capuana at Naples. In 1485–1491, Giuliano di Sangallo erected the Church of the Madonna delle Carceri at Prato, and in 1490 the Palazzo Gondi at Florence.

The cathedral at Pavia was commenced in 1490 according to Bramante's plans. The great Palazzo Scroffa at Ferrara, whose unfinished court may be numbered among the noblest productions of the early Renaissance, is but little later. One of the most prominent of Florentine palaces is the Palazzo Strozzi (*pl.* 41, *figs.* 2, 3), begun by Benedetto da Majano in 1489; its storeys are about 10 metres (33 feet) high. The court, with its colonnades, is the work of Cronaca; and is topped off by a massive and far-projecting cornice. The latter master also built at Florence the charming Palazzo Guadagni, of modest dimensions; this palazzo has a ground-floor with rustications and rectangular windows like the

Strozzi Palace, two upper storeys with decorated surfaces adorned with painting, and an upper floor with an open colonnade below the projecting cornice which crowns the edifice. Near the Pavia Cathedral, Bramante began, in 1492, the Church of S. Maria Incoronata di Canepanova, a dome-roofed octagon towering lightly above a square to one of whose sides is attached an octangular choir covered by a small cupola. Sta. Maria della Croce near Crema is octangular within, but round externally, and has an almost mediæval aspect. It was erected between 1490 and 1500, and has a cupola and a machicolated roof.

The Ideal in Church-architecture.—The existing edifices as a rule show us that the Italian masters were well aware that an ideal instead of a material expression was essential in a church, and to realize this expression they employed ingeniously-combined spaces of the most varying conformation, constructing, according to their individuality, lofty, broad, dome-covered spaces or long-drawn-out perspectives. During the mediæval ages, especially in the Gothic period, a certain practical ideal was aimed at, and each single school reached the mark not only ideally, but in the later period also believed that it had discovered a church equally corresponding to practical needs.

In the same manner it rested with each individual master to discover a new ideal—not for a practical church-building, but for an artistic and ideal space in which God could be worshipped. The various combinations recall the animated movement in the period of classical Christian antiquity when mankind strove to attain an ideal for a Christian church. That which they had in common, besides the individual freedom, was the living taste for a truly simple yet vigorous grouping; for the attainment of vistas from darkness into light, from narrow into broader and from lower into higher spaces; for contrasts of lighting, and for the apposition of straight and curved surfaces, and the play of contour arising therefrom. What both periods had in common was the love for a light and judicious construction. Such construction as the Italian architects of the close of the fifteenth century employed is commonly denominated “bold.” This expression is entirely false, and would be doubtful praise. Against a bold construction—that is, one approaching danger even in the slightest degree—any builder might reasonably guard himself, and the architect attempting it would show unpardonable recklessness; but it is otherwise with a construction of intelligent lightness in which the master employs the minimum of the necessary masses and gives the construction strength only where it is really needed; and this was the case with the masters of this period.

Palaces.—We have still to mention a series of conspicuous buildings without noticing the less important or even exhausting the important—the Palazzi Cerchi, Casamurata, Incontri, Giugni-Carigiani, and Magnani in Florence; the archbishop’s palace, with its porticoes, at Pisa; the Palazzo del Magnifico, the Palazzo Ciaga, and the Loggia del Papa at Siena; the Palazzi Fava, Gualanti, Bevilacqua, and that of the

podestà at Bologna; the Palazzo Roverella, the Palazzo de' Diamanti (1492), with its ashlar-work ornamented with facettes, as well as the Palazzi de' Leoni, Schifanoja, Bevilacqua, and Rondinelli at Ferrara; the Palazzo del Consiglio of Fra Giocondo at Verona; the Palazzo Schio and the rear-elevation of the Palazzo Tiene at Vicenza; the great and small Venetian palaces at Rome; the ducal palaces at Urbino, Gubbio, and Pesaro (*pl.* 42, *fig.* 6); the court of the Palazzo Buonsignori at Orvieto; and the Palazzo Gravina of Gabriele d'Agnolo at Naples.

Churches.—Among the churches we must name the façade of Madonna delle Nevi, the oratory of Sta. Catarina, and the Fontegiusta Church at Sienna, the last the work of Francesco Fedeli of Como; the sacristy of the Madonna di S. Satiro, Sta. Maria presso S. Celso, by Bramante, at Milan; the Churches of Madonna di Campagna, S. Sepolcro, and S. Sisto at Piacenza; S. Giovanni Evangelista and Madonna della Steccata at Parma; S. Francesco (1495), S. Benedetto (1500), added to in the sixteenth century, and S. Cristoforo (1498) at Ferrara; the choir of the cathedral (1499), a work of Biagio Rosetti, the campanile of the same (1505), S. Giovanni Battista, S. Spirito (1512), and the façade of S. Pietro at Modena; Sta. Maria del Carmine at Padua; S. Maurizio at Milan (1497) by Dolcebuono; S. Felice and S. Salvatore at Venice; Sta. Maria de' Miracoli at Brescia; S. Agostino and Sta. Maria del Popolo at Rome; S. Pietro and Sta. Maria della Pace at Montorio; and the churches of Madonna della Catena and Madonna di Porto Salvo at Palermo. All these structures display a great freedom of design, a suitable variety, a delicacy and refinement of taste, a wonderful naïveté in the imitation of antique forms, a subordination of the details to the whole, which cause the translation of antique forms to appear somewhat as a foreign element, since they stand in varied relations and are made to serve new purposes.

Structures of the Sixteenth Century.—The beginning of the sixteenth century also presents us with some edifices in which the mouldings are but little prominent and refinement of taste and delicacy of ornamentation are most conspicuous, as in the crypt of the Cathedral of Naples, built by Tommaso Malvito of Como in 1504; S. Benedetto at Ferrara, of which Giambattista and Alberto Tristani were appointed architects in 1553, but which was commenced in 1500; the Church of S. Giovanni Battista, built by Francesco Marighella, in the same city; S. Felice, S. Fantino, S. Salvatore, and the Fondaco de' Tedeschi at Venice, all dating from about 1506, and the last built by a German architect entirely in the Italian style; the Palazzo Comunale at Brescia, built in 1508 by Formentone, with later additions by Palladio and Sansovino; the octangular Church of Madonna dell' Umiltà at Pistoja, built by Ventura Vitoni in 1509, with a cupola erected by Vasari; and S. Spirito at Ferrara, founded by Alfonso II. in 1512. Surpassing all in nobility and elegance are the choir and transept of Como Cathedral, commenced in 1513 by Tommaso Rodari; the Scuola di San Rocco, commenced in 1517, but not finished until some time after; the porticoes of the Fabbriche Vecchi, finished in 1522 by

Strozzi Palace.—The Palazzo Strozzi at Florence, designed by Bernardo Rossellino, built in 1525 by Guglielmo de' Rosselli, with painted terra-cotta decorations, is a far-proportioned building, finished in a year, many of those men-dral, but we cannot fix upon any precise year. Can the feeling for delicacy of form was more one of the sixteenth century advanced, that a more literal copy of the elements soon became general, and that the detail of the time of the Roman Empire, importance and determined the entire character of the work, when he worked at Rome, about 1500, to the antique, yet without permitting the detail of the *ensemble*.

Other works a certain romantic spirit—evident in the selection of the entire composition—reigns over the whole, a remains of the Roman Empire afterward brought simplicity and massiveness of the entire design. Character of the Palazzo della Cancelleria (*pl.* 43, *fig.* 3), which is set behind the symmetrically-designed façade of SS. Lorenzo e Damaso, showing any outward mark of the union to be seen. The entire massive simplicity recalls the grandeur of the structures of Rome. The Palazzo Giraud shows an almost similar system. A architect constructed the German national church at Rome (Sta. Maria dell' Anima) under Bramante's influence; and perhaps also the design of the Casa Santa at Loretto comes from Bramante (perhaps from Sanmicheli). The designs for St. Peter's were made under Bramante's influence; he himself prepared one showing a Greek cross, and according to it began the colossal structure.

Peruzzi.—Bramante's artistic successor after his death, in 1514, may be considered to be Baldassare Peruzzi, who built the Villa Farnesina at Rome in 1509 for the rich merchant and art-patron Agostino Chigi. Peruzzi's Massimo Palace adapts itself to an irregular space and follows the curve of the street, yet has some extraordinarily picturesque parts. The small palace shown in Figure 4 proves that Peruzzi was a follower of Bramante.

Sanmicheli.—At the period when Bramante commenced work at Rome, Michele Sanmicheli, then twenty years old, came there also, but afterward went to Montefiascone, where he erected the Church of Madonna delle Grazie. From Montefiascone he went to Orvieto, where he became architect of the cathedral. Pope Clement allied him with Antonio di Sangallo for the reparation and strengthening of the fortifications throughout the Papal States, and still later he worked at Venice and Verona; of which more anon.

Raphael Sanzio.—The Palazzo Pizzardi at Bologna, in whose magnificent columned court ancient brick-construction achieved a new triumph, belongs to the commencement of the sixteenth century. Under Bramante's influence the famous Raphael Sanzio, who had devoted a full year

of his life to the study of antique structures, was appointed architect. As a fruit of his study a still greater massiveness of the details is conspicuous. The windows, as in many late classical edifices, compose a temple-façade with alternating inclined and curved pediments, as in the Sun-temple at Baalbec, and in the Pantheon and many late buildings at Rome. The cornice, archæologically correct, imitated the antique, yet the rustications remained in their rich formal entirety.

The next application of this system may without doubt be attributed to Baccio d'Agnolo, who applied it to the Palazzo Bartolini-Salimbeni at Florence. Whether, in fact, this building antedates Raphael's is of little importance, since it does not detract from the fame of the men who took these motives from the ancients. At any rate, Raphael employed it on a grand scale, as he designed the plans for the Palazzo Pandolfini at Florence, which after his death was finished in accordance with his directions. Raphael's works in Rome are the Palazzi Ugucioni and Vidoni and the superintendence of St. Peter's.

After the death of Raphael, Peruzzi undertook the superintendence of the construction of St. Peter's, but after the taking of the city by the Germans, in 1527, he fled to his native city of Siena, where he worked upon the cathedral and built the Church of the Servi, and where many structures preserve his memory.

The construction of S. Antonio at Padua, with its cupolas, as well as its model, St. Mark's at Venice, was still powerful in its influence at this period, and Andrea Riccio, or Briosco, began in 1520 the magnificent Church of S. Giustina at Padua after the same prototype, with cupola after cupola. Soon afterward Andrea della Valle and Agostino Righetto built the cathedral of the same city according to the same system.

Giovanni Maria Falconetto of Verona worked at Padua from 1513 to 1534, and in 1524 built the Palazzo Giustiniani, also many of the city gates, as those of S. Giovanni and the Porta Savonarola.

Sangallo.—At the same time that Raphael worked at Rome, Antonio di Sangallo the elder was active at Montepulciano. In 1518 he built the Church of the Madonna di S. Biagio, in 1519 the Palazzo del Monte and that of Tarugi, and the construction of the strong Civita Castellana is ascribed to him.

Giulio Romano, Raphael's friend and pupil, built the Villa Madama at Rome for Cardinal Giulio de' Medici, afterward (between 1523 and 1534) Pope Clement VII.; in 1526 he erected in Mantua the Palazzo del Tè, as well as many other buildings, through which he impressed upon the entire city such an aspect that the grand duke Federigo Gonzaga declared that it was not his city, but Giulio Romano's. The same master afterward built S. Benedetto, south of Mantua. In this church he employed the mediæval ground-plan of a three-aisled nave, one-aisled transept, and choir with aisle and chapels; yet not only does the construction deviate from the mediæval pattern in its comparative lowness, but the nave is entirely separated from the side-aisles by the singular arrangement of the piers, and

the apse is divided from the aisle around it by a wall; so that in planning the spaces the architect seems to have had no other aim than to produce some picturesque perspectives. At this period Michelangelo Buonarotti worked at Florence, and in 1520 erected the tombs of the Medici in the sacristy of S. Lorenzo.

Jacopo Sansovino was the architect of a series of palaces in Venice in the fourth decade of the sixteenth century—in 1532 the Palazzo Corner della Cà Grande, in 1536 the Zecca (mint) and the Library of St. Mark's (*pl.* 42, *fig.* 4), and in 1538 the Church of S. Giorgio dei Greci.

Baccio d'Agnolo was active at Florence until his death, in 1543. Though the results are not very magnificent, he had the opportunity to distinguish himself as architect of a series of palaces, including, besides those already mentioned, the Palazzi Serristori, Levi, Roselli del Turco, etc.

Antonio di Sangallo the younger meanwhile went to Rome and directed the construction of St. Peter's until his death, in 1546. At the same period he built the churches of S. Spirito, Our Lady of Loreto (Sta. Maria di Loreto), and the Palazzo Farnese at Rome (*pl.* 43, *fig.* 5), to which Michelangelo afterward added the grand crowning cornice. The Palazzo Buoncompagni at Bologna arose in the year 1545.

Michelangelo.—After the death of Sangallo, Michelangelo undertook the continuation of St. Peter's at Rome (*figs.* 1, 2), on which he worked without remuneration for the good of his soul from 1546 until his death, in 1564. He transformed the entire structure. Bramante had commenced it as a Greek cross; Raphael would have made it a Latin one. Michelangelo went back to the idea of a Greek cross, which Peruzzi had already continued with four small domes set around the principal dome; Antonio di Sangallo's design returned to the Latin cross. According to Michelangelo's plan, the grand dome would dominate the façade as well as the transepts. It was he who gave to the dome its magnificent dimensions and beautiful profile, and he arranged the spacing of the pilasters of the interior as they appear to-day. Doubtless he laid out the immense attic—that new storey above the principal cornice—and thus attained for the whole a harmony of proportion which was admirable, but which was destroyed afterward by the addition of the nave. His design, which he was not permitted to carry out entirely, was continued after his death, but in 1605 Carlo Maderna altered the plan to a Latin cross. Other works of Michelangelo at Rome are the design of the Capitol, the construction of Sta. Maria degli Angeli, and, in the last days of his life, the Porta Pia.

After the death of its former architect the Palazzo Farnese at Rome was undertaken by Michelangelo, who erected the upper part of the façade and employed in the columned arcades of the court the antique pillar-system with attached half-columns, which he executed in two storeys. In later times the harmony of this massively-impressive design has been injured by the addition of a third storey.

In Florence, Baccio d'Agnolo's son Domenico was active in constructing the Palazzo Nicolina (now Buturlino); in the same city Giovanni Antonio Dosio built the Palazzo Larderel, and Bernardo Tasso (1547) erected the arcades of the Mercato Nuovo.

In 1549, Palladio obtained the commission to rebuild the mediæval town-hall of Vicenza, and executed it by erecting a basilica of pure marble which shows two storeys of arched windows.

The palace of Admiral Andrea Doria was built about the middle of the sixteenth century at Genoa, and in 1550 the Palazzo Ducale (now the Palazzo della Prefettura), the former by the Florentine master Fra Giovanni Agnolo Montorsoli, the latter by Rocco Pennone.

Giacomo Barozzi Vignola has had considerable influence upon the development of Architecture by the work he wrote upon the orders of columns. In this work he gave even the minutest proportions of the columns, pillars, arches, and entablatures of the antique monuments of the later epochs, as well as of the works of his contemporaries, and above all his own compositions, and so established rules which exercised a powerful influence not only on buildings, but also on all other arts and industries, and was also instrumental in spreading the Italian style in other lands. Although afterward taste altered, although many of his followers employed other orders, yet his system retained its power in all periods. Among his edifices erected about the middle of the century must be particularly named the Castle of Caprarola, between Rome and Viterbo (*pl.* 43, *fig.* 6), as well as the Villa of Pope Julius III., which he and Vasari built at Rome in 1550-1555.

Andrea Marchesi built the Palace of Malvezzi-Campeggi, with its exquisite court, and also the Palazzo Fantuzzi at Bologna. The Palazzo Bolognetti, of which the lower part is older, was completed in 1551. Annibale Lippi erected the Villa Medici at Rome about 1551, and in 1552 Sansovino built the Fabbriche Nuove at Venice. Between 1555 and 1559, Pirro Ligorio built the Villa Pia in the Vatican garden. The Uffizi at Florence was built by Vasari in 1560.

Galeazzo Alessi was a leading master of the second half of the sixteenth century. He worked chiefly in Genoa, and constructed a number of considerable palaces and villas, among which are the Palazzi Lercari, Spinola, and Sauli (1553), the beautiful court of the last-named of which is shown on Plate 41 (*fig.* 4). He also constructed the famous Sta. Maria da Carignano, in which he approached St. Peter's, which at that time was under the direction of Michelangelo, and in the interior he attained a particularly harmonious effect.

Bartolommeo Ammanati, a pupil of Sansovino, was at work during the second half of the sixteenth century principally in Florence, where he built many private houses, the courts of which are adorned with porticoes. His chief works are the Great Santa Trinità bridge over the Arno and the court of the Palazzo Pitti.

The small Palazzo Riccardi at Florence, built in 1565, is a work of

Bernardo Buontalenti, who also erected the entrance-hall of the hospital (Ospedale Sta. Maria Nuova) in that city.

Church of Il Gesù.—Among the most conspicuous churches at Rome built in the second half of the sixteenth century is that of Il Gesù, erected by Vignola in 1568. This has a tunnel-vaulted nave with a row of chapels on each side, a cupola, and tunnel-vaulted transepts and choir ending in an apse—an arrangement which henceforth, particularly with a façade having two towers, was for a long time predominant, and which to a certain extent put a stop to the individual endeavors of the masters of the Renaissance to work out a suitable form of church. It was, in fact, a new ideal for the Church, corresponding with the taste of the times. It does not differ very widely from that of the Middle Ages.

Though these churches were not carried so high as the French cathedrals of the mediæval times, the massive pilasters gave them an aspiring effect. The ample space of the nave formed a fit place for the reception of a great assemblage in front of the pulpit, where each could see the Host as it was brought to the altar. In the side-chapels individuals could carry on their devotions undisturbed or several priests could read mass at the same time. The light falling from the cupola and the lighting of the separate chapels, as well as of the principal aisle, transepts, and choir, are extraordinarily effective—almost theatrical. The arrangement, which would be sober for simple forms, could by pompous stucco-ornamentation, such as was executed at a later date, be caused to make a bewildering impression.

But this almost theatrical pomp is expressed in the entire spirit of the following period. Not simple earnestness, not modest dignity, but great expenditure, was what dazzled and fascinated, which in union with the mystical effects induced by the mode of lighting captivated the eyes and hearts of the people. The sombre nave led the eye upward to the light of the cupola, where the sculptured and painted heavenly choir seemed to move to and fro and to join in the hymn of jubilant praise whose clear notes were intoned rapturously through the halls while the clouds of incense arose on high. It was, in fact, the taste of the period which found expression in that church-arrangement with which Vignola in the Church Il Gesù closed the attempts of individual artists.

Andrea Palladio was active in Vicenza at the same time with Vignola. In his lifetime he was but little distinguished above his contemporaries, but, like Vignola, he exercised great influence through the preparation of a system of the orders. He endeavored to give his structures an imposing effect by grand proportions and colossal ranges of pilasters, which rose through several storeys. He produced his effects exclusively, not by expressing the interior arrangements, but by the importance of the parts. He had to erect his buildings of brick, but he covered them with stucco to form massive-looking rustications, and constructed colonnades whose entablatures he formed of wood in classic form. The Palazzo Tiene of

1556-1558 is partly under the influence of Giulio Romano's works at Mantua. The Palazzo Chiericati (1566; now the Museo Civico) has two ranges of half-columns, which are continued at the sides as open halls. In the Palazzo Valmarano (1566) there is a reminiscence of the antique temple-pediment in the form of six great pilasters, rising through two storeys, placed in front of the façade, whose entablature is broken around them. The meaning of this arrangement is not clear to the unarchitectural eye, as the façade is only one bay longer on each side and the want of the great pilasters at the angles is greatly felt. Only an antiquary can tell what the artist intended. An attic affords a third storey.

The Palazzo Barbarano (1570) at Vicenza is richly decorated, as is also the Palazzo Prefettizio, or Loggia del Delegato. The Teatro Olimpico was built in 1584 according to Palladio's designs, and is an imitation of an antique theatre. S. Giorgio Maggiore was built in 1560, and the Church of the Redeemer at Venice in 1576 (*pl.* 40, *fig.* 5). The façade of the latter reminds us of the ancient temple-façade, which is completely realized in the villa shown on Plate 43 (*fig.* 7).

Pellegrino Tibaldi built the court of the archbishop's palace as well as the Palazzo Magnani at Bologna and the court of the archbishop's palace at Milan, and he also added to the façade of the cathedral at Milan the portal and the magnificent windows, which, however, mar the harmony of the arrangement. The Villa Medici, erected by Annibale Lippi on the Monte Pincio at Rome, has open arcades between tower-like, elevated angle-buildings and rich plastic adornments. In 1582, Scamozzi commenced the Procuratie Nuove (now the Palazzo Reale) at Venice.

The form-development of the Renaissance, that second birth of antique art, had made a long stride forward. From a refined delicacy of detail it had passed on to an exuberance of strength which was perhaps more antique than that delicacy, but only in the sense of the last period of the antique—that of its decadence. From a characterization of the whole which permitted the meaning of each part to be expressed, it had led to the *ensemble* in which each characteristic of the several parts was hidden behind an empty screen of forms. The attempt to gain effect through imposing masses had given rise to a confusion of conventionalisms which was augmented through the attempt of each master to surpass all others. Michelangelo had already shown the way to this through the excess of his originality, and after his death two decades had scarcely passed before a deeper decadence set in, the beginning of complete degeneracy. Before we can follow architectural development farther in this direction we must cast a glance over other countries.

Italy had in the course of the fifteenth century become practically the centre of intelligence, and exercised a powerful influence on all other nations through the flourishing condition of its sciences. The cultivation of classical literature, the desire to create a new literature founded upon the genius and the forms of the ancient, were everywhere more or less progressive. Young men ardent for knowledge flocked from all nations

Bernardo Buontalenti, who also erected the entrance-hall of the (Ospedale Sta. Maria Nuova) in that city.

Church of Il Gesù.—Among the most conspicuous churches built in the second half of the sixteenth century is that one erected by Vignola in 1568. This has a tunnel-vaulted narrow row of chapels on each side, a cupola, and tunnel-vaulted transept and choir ending in an apse—an arrangement which henceforth, with a façade having two towers, was for a long time predominant, which to a certain extent put a stop to the individual endeavors of the masters of the Renaissance to work out a suitable form of church. It was, in fact, a new ideal for the Church, corresponding with the needs of the times. It does not differ very widely from that of the Middle Ages.

Though these churches were not carried so high as the French cathedrals of the mediæval times, the massive pilasters gave them a certain effect. The ample space of the nave formed a fit place for the assembly of a great assemblage in front of the pulpit, where each could see the priest as it was brought to the altar. In the side-chapels individuals could follow their devotions undisturbed or several priests could read at the same time. The light falling from the cupola and the light through the separate chapels, as well as of the principal aisle, transepts, and choir, was extraordinarily effective—almost theatrical. The arrangement, which would be sober for simple forms, could by pompous stucco-decoration, such as was executed at a later date, be caused to make a more striking impression.

But this almost theatrical pomp is expressed in the entire succeeding following period. Not simple earnestness, not modest dignity of expenditure, was what dazzled and fascinated, which in union with the mystical effects induced by the mode of lighting captivated the hearts of the people. The sombre nave led the eye upward to the cupola, where the sculptured and painted heavenly choir seemed to move to and fro and to join in the hymn of jubilant praise whose notes were intoned rapturously through the halls while the incense arose on high. It was, in fact, the taste of the period found expression in that church-arrangement with which Vignola's Church Il Gesù closed the attempts of individual artists.

Andrea Palladio was active in Vicenza at the same time with Vignola. In his lifetime he was but little distinguished above his contemporaries, but, like Vignola, he exercised great influence through the preparation of a system of the orders. He endeavored to give his structures an effect by grand proportions and colossal ranges of pilasters, and by the use of several storeys. He produced his effects exclusively by the interior arrangements, but by the importance of the exterior. He had to erect his buildings of brick, but he covered them with stucco to form massive-looking rustications, and constructed colonnades and entablatures he formed of wood in classic form. The Palazzo

I

of
it
is

1
2
3
4
5

to the Italian universities, and, while in earlier times only campaigns or pilgrimages brought the natives of other countries into Italy, now they came to see the land whose nature was considered marvellous—the land that was the home and the theatre of that wondrous ancient world and its grand deeds, the land that had given a new culture to mankind. The renovated, the resurrected old captivated the eyes, and the fame of the art-supremacy of the Italians was not less than their scientific celebrity; so that the former soon extended its influence to other lands, as had been the case with the latter.

2. SPANISH RENAISSANCE.

Spain was the first country into which the new style penetrated. Enrique de Egas built in 1480 the College of Sta. Cruz at Valladolid, and in the same city, in 1488, there followed the Colegio S. Gregorio, which is particularly charming from the richness of its detail. In these structures we find only certain antique details mixed with Gothic and Moresque elements. In 1504 the same master constructed the portal of the foundling hospital at Toledo, which has a tympanum richly adorned with sculptures and enclosed in a round arch. In 1521, Ibarra built the Colegio Mayor at Salamanca, and at the same period the Casa de los Muertos and the Palace of the Marquesa de las Naves were erected in the same city.

In 1526, Charles V. permitted a portion of the Alhambra, at Granada, to be taken down that a palace might be executed after the plans of Machuca. In this structure the classical style already appears in tolerable purity. The principal portion is a circular range of Doric columns, with an Ionic one above, surrounding a court. (See ground-plan, *pl.* 21, *fig.* 6.)

In 1529, Diego de Siloe began the Cathedral of Granada in strict classical style; that of Malaga is also ascribed to the same master. The chapter-house of Seville Cathedral, built by Diego Rano in 1530, shows also a classical construction, while the royal chapel built in 1531 by Alonso de Covarrubias in the Cathedral of Toledo has indeed the principal details antique, but among them the varied forms of the Christian mediæval period are brought in with exuberant splendor.

The sacristy of the Cathedral of Seville (1533) and the city-hall (*ayuntamiento*) of the same city also allow this mixture of forms to appear in the most elegant manner, while the archbishop's palace at Alcalá de Henares, built (1534) by the above-mentioned Alonso, shows a pleasant court similar to those of Florence, with Corinthian-like capitals and round arches with antique profiles, having above them a second storey of similar columns, the latter surrounded by an architrave which carries a roof. The court of the Convent of Luziana is similar; this is surrounded by four storeys of colonnades of considerable dimensions, some united by round arches, others by trefoil arches, while still others carry an architrave. The collegiate church at Osuna has a magnificent portal of the year 1534. The Alcazar of Toledo (1537) recalls the façade of the Farnese Palace at

Rome, and it may therefore be asked whether a later alteration has not intruded into the work of Alonso de Covarrubias. The fine cloister built (1546) by the same master at S. Miguel de los Reyes in Valencia is, however, still intact.

The façade of the Convent of S. Marcos at Leon is in the full bloom of the early Renaissance, as is also the richly-adorned cloister of S. Zol at Carrion, both works of Juan de Badajos. The severe and inharmonious triumphal arch erected by Charles V. at Burgos in honor of Fernan Gonzalez, and the Cathedral of Jaen, built by Pedro de Valdelvira, are works of the classical style. Less strictly so are the Colegio S. Nicolas, the transept of the cathedral, and the Casa del Cordon at Burgos, the famous Chapel de los Beneventes at Medina de Rio Seco, and the Carcel del Corte at Baeza.

With even greater coldness the classical style is displayed at the Convent S. Lorenzo of the Escorial, begun in 1563 by Philip II. according to the plans of Juan of Toledo, who died in 1567, leaving its completion to his pupil Juan de Herrera. The Cathedral of Valladolid, the south side of the Alcazar of Toledo, the Bolsa (Exchange), the palace at Aranjuez, and the Casa de Oficios at Seville, are all the works of Herrera. In these Palladio's influence is manifest, as it is also in the works of Herrera's contemporaries and immediate successors.

3. FRENCH RENAISSANCE.

Italian masters were summoned to the court of France as early as the reigns of Charles VIII. (1483-1498) and Louis XII. (1498-1515), but it was chiefly Francis I. (1515-1547) who by his zealous advocacy brought about a reformation in Architecture and won France over to the Renaissance. Since there were summoned to France such prominent Italian masters as Leonardo da Vinci, Benvenuto Cellini, Serlio, Primaticcio, etc., it is indeed surprising that only certain Italian forms and motives obtained acceptance, that the entire arrangement of the structures followed the traditions of the fifteenth century, and that the new art-speech found application in outward ornamentation only. Without doubt these masters worked more in the line of other arts than directly in Architecture, and it may be that some of their works—in which the Italian manner appeared conspicuously—have disappeared; but the conditions of life in France as a whole differed from those of Italy, and the French Late Gothic, which had found an entirely characteristic expression, was too powerful to permit the new style to predominate except in the decorative arts. Thus the *ensemble* of the edifices is that of the Late Gothic works.

The striving after high and wide spaces became even less than in the earlier period; the high, broad hall in which the feudal lord assembled his retainers diminished in importance, while the small dwelling-rooms gained, for a dwelling needs only moderate height. Nobility of proportions had not belonged to the French Late Gothic, and in the French Renaissance also we find bizarre rather than noble proportions.

The Churches—which were only of subordinate importance, as the works of the thirteenth century still sufficed for the requirements, since even their completion, after the eye for hundreds of years had been accustomed to see them as incomplete as a torso, was not taken to heart—were built according to the mediæval system, which was so firmly established that no one imagined it possible to erect a church according to any other plan. Therefore only purely external classical forms were used as an outward decoration.

Structures of the Sixteenth Century.—No works of the fifteenth century which had their external decoration in the new style are extant—or, at least, are known; therefore the new forms begin with the sixteenth century. The Château Gaillon (1502–1510) is indeed destroyed, yet a remnant rebuilt in the court of the École des Beaux-Arts at Paris shows low storeys in which semicircular arches are not yet employed; so that the low reversed curved arch, which is common also in the Late Gothic of France (*pl.* 37, *figs.* 1, 6), appears among the new forms. The Palais de Justice at Dijon belongs to the same early period, and has also a mixture of old and new forms, as is likewise the case in the Château Chenonceaux (1515–1523).

The Château Bury, also begun in 1515 (*pl.* 44, *fig.* 8), has the ancient round towers of the previous period. These, however, no longer serve simply for defence, but have great windows in the fashion of the time and are prepared for habitation. The entire main building no longer recalls the castle, but has high roofs, gables, and windows reaching to the cornice, above which are dormers enriched with fanciful gabled decoration, just as in the palace of Late Gothic times.

The Château Blois, begun in 1516, allows the mixed architecture to appear still more plainly in a pleasing want of harmony—pleasing because the naïveté of the mixture, the richness and the ornamentation of the details, completely disarm criticism, and almost make up for the absence of what theory may consider correct. How can the sloping lines of the staircase (*fig.* 6) be in harmony with the pilaster architecture? How can the Gothic recurved arches, the baldachins, the gargoyles, be in harmony with the purely decorative elements of the pilaster ornamentation? The massive cornice—partly a reminiscence of the projecting water-table—weighs upon the light pilasters and entablature most inharmoniously, and yet how charming is the effect, since it is so characteristic and shows us how the old and the new were commingled at the court of Francis I.!

The blending of antique and modern elements is effected in the most highly-original manner in the Château St. Germain, which Francis I. caused to be rebuilt, retaining at the same time a portion of the mediæval work. Here massive buttresses of brick form the frame in the court, and between these the arcades are inserted. Gothic elements come out strongly also in the choir of St. Etienne du Mont at Paris, built in 1517–1541. Only isolated Renaissance elements are mingled here, but in the

remainder of the structure these come out more strongly, and in the tolerably late façade (including also the yet later additions, *pl.* 45, *fig.* 6) are completely predominant.

Tomb of Louis XII.—Soon after the death of Louis XII. his successor, Francis I., had a magnificent tomb erected for the former. Jean Juste was the sculptor of this work, which was set up at St. Denis in 1518 (*fig.* 8). The figures of the apostles below are additions of a later time. In the architecture the master has evidently held closely to Italian art, and the Renaissance is here brought into play without admixture with mediæval elements.

The Hôtel d'Anjou at Angers exhibits an elegant Early Renaissance of about the date 1520. The châteaux at Azay-le-Rideau, on the Indre, Bénéhart, Lude, St. Amand, and Perché are distinguished by the rich architecture of the roof-gables and dormers. The last has Gothic gables with pinnacles and grotesques, but it is also provided with Corinthian pilasters. The châteaux Châteaubriant and Nantouillet (*pl.* 44, *fig.* 5) show the mixture of both series of forms. The choir of St. Peter's at Caen (*pl.* 45, *fig.* 1), begun in 1521, has an entirely Gothic system of construction, but in its decoration it is as completely Renaissance. Among the charming works into which Gothic decoration—or, at least, a reminiscence of it—enters more or less among the Gothic constructional forms, we may mention the Château of Sandifer, with its four round angle-towers, its pilaster-adorned windows, each with a mullion and transom, and its richly-decorated roof-balcony as a finish to the walls; the Château Rocher de Mésanger, with flat arches in the arcade of the court and fancifully-terminated balcony; and, lastly, the ducal palace at Angers.

Château Chambord.—In 1523, Francis I. began the erection of the Château Chambord, the main building of which is shown on Plate 44 (*fig.* 2). Pierre Nepveu, called Trinqueau, superintended its construction. The entire design both of this principal building, which was enclosed by a rectangular court, and of the wings enclosing this court and flanked on their angles with round towers, recalls the mediæval arrangement. The low storeys and the lofty roofs with their gables and chimneys belong to the older period, but the form-system of the decoration is entirely new and shows how exquisitely this new system can be adapted to the romantic older ground-plan. The lantern over the staircase, which occupies the centre of the main building (*fig.* 10), is especially charming, as are also the chimneys, which are decorated with tabernacle-shaped niches and every conceivable ornament. The roof—or, properly, the roofs—rise independently in the interior above a terrace which extends around the entire building—a survival from the strong castle of mediæval ages.

Among the churches of this period is St. Pantaléon at Troyes (1524), whose columns are Corinthian, while the vaulting is Gothic. St. Michael's at Dijon exhibits a complete façade of this epoch, with three round-arched portals and a lofty gable between two towers. St. Nicolas's at Troyes (1526) has Gothic radiating vaulting, which is in part adorned with free

tracery pendent below it; here Gothic construction predominates. In other cases, as in the Palais de Justice at Orléans (*pl.* 45, *fig.* 7) and that of Beaugency (*pl.* 44, *fig.* 3), Gothic motives intrude even into the decoration of secular structures. The mediæval window-arrangement with narrow lights, stone mullions, and transoms endured longest, as in the so-called "House of Francis I." at Fontainebleau, which, with some alterations, has lately been removed to Paris (*fig.* 9).

Château Madrid.—Gothic motives occur also at the Château Madrid, which Francis I. had erected in 1526 in the Bois de Boulogne near Paris, and which, though unfortunately destroyed during the Revolution, is known, from drawings still preserved, to have been devoid of mediæval character except in that high roof of the North which France even later would not give up (*fig.* 1). The arcades—two storeys of which surround the edifice—show clearly the Italian influence, as does also the height of the storeys, which is about 7 metres (23 feet). The architects, Pierre Gadier and Gratien François, the latter of whom carried on the building after Gadier's death, in 1531, were, however, both Frenchmen.

The Château of Fontainebleau, also a work of Francis I., exhibits more completely the forms of the Renaissance, though, indeed, that naïveté is absent which seems so pleasing to us in the works of the mixed styles. The small Château of Sansac, near Loches, belongs to the year 1529. On a corner of the Rue du Palais de Justice at Troyes there is a house built in 1531 which has a charming oriel and an elegant courtyard. Orléans and Blois show many examples of similar houses.

The Church of St. Eustache at Paris was begun in 1532. Its arrangement is completely Gothic, with the entire apparatus of buttresses and flying-buttresses clothed in the wire-drawn proportions of ultra-artificial Renaissance forms as in an unsuitable vestment, although some of the details are very charming. The impression made by the wild forms of a degenerate tracery which fills the round-arched windows is very displeasing.

Hôtel de Ville.—Most attractive, on the contrary, is the architecture of the Hôtel de Ville at Paris, which was begun in 1533, but on which work was afterward suspended until 1549, when it was resumed by the Italian Domenico Boccardo after a plan of his own. Notwithstanding the foreign birth of its architect, it exhibits entirely French peculiarities. The edifice had, indeed, a long history down to its completion in 1841 and to its rededication in 1871; and when examining the view on Plate 45 (*fig.* 2), we must not forget that there have been many changes in various parts of Boccardo's plan.

The Hôtel Ecoiville, at Caen (1535), may be cited as in many respects one of the most charming works of the early French Renaissance. Nobility in the proportions of the details here reached its highest point; forms foreign to the Renaissance are already eliminated, and all that remains from the older period is that which can be readily assimilated and worked into a harmonious whole (*pl.* 44, *fig.* 4). Two examples of the ornament

of that date (*pl.* 44, *figs.* 11, 12) exhibit, the first the specifically French manner, the second a nearer approach to the Italian.

About the middle of the century the poetry gradually disappeared from the French Renaissance, and the so-called "House of Agnes Sorel," at Orléans, shows the prosaic nature which characterized the French *bourgeoisie* of that period, while the bishop's palace at Sens exhibits the somewhat grander proportions aimed at by the clerical dignitaries of France.

At that period the display of a more strict classicality was attempted in the grand palaces. This induced, on the one hand, freer proportions; on the other, a magnificent but purely external artistic development of the façade. The ideal was like that at which Italian architects had aimed at the beginning of the century. It was not, indeed, so magnificent, nor was there so much striving after massiveness and simplicity of outline: there was only an endeavor to remove the last old survivals, while there was still an adherence to the custom of breaking the great masses into smaller portions. French edifices of this date present a central building with higher and lower wings, a sky-line enlivened by varied forms of gables, and finally, drawn over the whole, a screen of architectural forms simply decorative and calculated to produce an impression of richness and elegance.

The Louvre.—This new purpose found expression in the construction of the Louvre, which Francis I. began in 1528 in the place of the mediæval castle which then occupied the site. Pierre Lescot superintended the construction after 1546; this older portion is shown on Plate 45 (*fig.* 3). On the river side Lescot built the so-called "Small Gallery," over which was the Galerie d'Apollon, and he also commenced the Long Gallery, which is more than 400 metres (1322 feet) in length. This palace, like other great buildings, has had manifold vicissitudes, and was not entirely finished until very recently; so that we have shown the united Louvre and Tuileries on Plate 50 (*fig.* 6) as a building of the present period. While it is clear from the above-mentioned characteristics, and can be seen in the illustration, that the poetic glamour of the earlier decades no longer surrounds the structures of this period, yet the Château d'Ecouen (1541; *pl.* 44, *fig.* 7) exhibits a positive severity and an application of strictly classical *motifs* which can have resulted only from a study of ancient art in Italy.

A prominent architect of his day, Philibert de l'Orme, built (after 1552) the Château Anet for Diana of Poitiers (*pl.* 45, *fig.* 9); in this also the severe classical element prevails.

The Tuileries.—De l'Orme commenced (about 1564) the construction of the Tuileries, a magnificent palatial design surrounding one large and four small courts, yet it was incomplete in execution, and was subsequently remodelled. The system (*fig.* 5) used by him exhibits in the arcades of the lower portion a relationship with the Italian order, but in the preservation of the transoms and mullions of the windows, as well as in the varied arrangement of the sky-line, it evinces French taste.

the apse is divided from the aisle around it by a wall; so that in planning the spaces the architect seems to have had no other aim than to produce some picturesque perspectives. At this period Michelangelo Buonarotti worked at Florence, and in 1520 erected the tombs of the Medici in the sacristy of S. Lorenzo.

Jacopo Sansovino was the architect of a series of palaces in Venice in the fourth decade of the sixteenth century—in 1532 the Palazzo Corner della Cà Grande, in 1536 the Zecca (mint) and the Library of St. Mark's (*pl.* 42, *fig.* 4), and in 1538 the Church of S. Giorgio dei Greci.

Baccio d'Agnolo was active at Florence until his death, in 1543. Though the results are not very magnificent, he had the opportunity to distinguish himself as architect of a series of palaces, including, besides those already mentioned, the Palazzi Serristori, Levi, Roselli del Turco, etc.

Antonio di Sangallo the younger meanwhile went to Rome and directed the construction of St. Peter's until his death, in 1546. At the same period he built the churches of S. Spirito, Our Lady of Loreto (Sta. Maria di Loreto), and the Palazzo Farnese at Rome (*pl.* 43, *fig.* 5), to which Michelangelo afterward added the grand crowning cornice. The Palazzo Buoncompagni at Bologna arose in the year 1545.

Michelangelo.—After the death of Sangallo, Michelangelo undertook the continuation of St. Peter's at Rome (*figs.* 1, 2), on which he worked without remuneration for the good of his soul from 1546 until his death, in 1564. He transformed the entire structure. Bramante had commenced it as a Greek cross; Raphael would have made it a Latin one. Michelangelo went back to the idea of a Greek cross, which Peruzzi had already continued with four small domes set around the principal dome; Antonio di Sangallo's design returned to the Latin cross. According to Michelangelo's plan, the grand dome would dominate the façade as well as the transepts. It was he who gave to the dome its magnificent dimensions and beautiful profile, and he arranged the spacing of the pilasters of the interior as they appear to-day. Doubtless he laid out the immense attic—that new storey above the principal cornice—and thus attained for the whole a harmony of proportion which was admirable, but which was destroyed afterward by the addition of the nave. His design, which he was not permitted to carry out entirely, was continued after his death, but in 1605 Carlo Maderna altered the plan to a Latin cross. Other works of Michelangelo at Rome are the design of the Capitol, the construction of Sta. Maria degli Angeli, and, in the last days of his life, the Porta Pia.

After the death of its former architect the Palazzo Farnese at Rome was undertaken by Michelangelo, who erected the upper part of the façade and employed in the columned arcades of the court the antique pillar-system with attached half-columns, which he executed in two storeys. In later times the harmony of this massively-impressive design has been injured by the addition of a third storey.

In Florence, Baccio d'Agnolo's son Domenico was active in constructing the Palazzo Nicolina (now Buturlino); in the same city Giovanni Antonio Dosio built the Palazzo Larderel, and Bernardo Tasso (1547) erected the arcades of the Mercato Nuovo.

In 1549, Palladio obtained the commission to rebuild the mediæval town-hall of Vicenza, and executed it by erecting a basilica of pure marble which shows two storeys of arched windows.

The palace of Admiral Andrea Doria was built about the middle of the sixteenth century at Genoa, and in 1550 the Palazzo Ducale (now the Palazzo della Prefettura), the former by the Florentine master Fra Giovanni Agnolo Montorsoli, the latter by Rocco Pennone.

Giacomo Barozzi Vignola has had considerable influence upon the development of Architecture by the work he wrote upon the orders of columns. In this work he gave even the minutest proportions of the columns, pillars, arches, and entablatures of the antique monuments of the later epochs, as well as of the works of his contemporaries, and above all his own compositions, and so established rules which exercised a powerful influence not only on buildings, but also on all other arts and industries, and was also instrumental in spreading the Italian style in other lands. Although afterward taste altered, although many of his followers employed other orders, yet his system retained its power in all periods. Among his edifices erected about the middle of the century must be particularly named the Castle of Caprarola, between Rome and Viterbo (*pl.* 43, *fig.* 6), as well as the Villa of Pope Julius III., which he and Vasari built at Rome in 1550-1555.

Andrea Marchesi built the Palace of Malvezzi-Campeggi, with its exquisite court, and also the Palazzo Fantuzzi at Bologna. The Palazzo Bolognetti, of which the lower part is older, was completed in 1551. Annibale Lippi erected the Villa Medici at Rome about 1551, and in 1552 Sansovino built the Fabbriche Nuove at Venice. Between 1555 and 1559, Pirro Ligorio built the Villa Pia in the Vatican garden. The Uffizi at Florence was built by Vasari in 1560.

Galeazzo Alessi was a leading master of the second half of the sixteenth century. He worked chiefly in Genoa, and constructed a number of considerable palaces and villas, among which are the Palazzi Lercari, Spinola, and Sauli (1553), the beautiful court of the last-named of which is shown on Plate 41 (*fig.* 4). He also constructed the famous Sta. Maria da Carignano, in which he approached St. Peter's, which at that time was under the direction of Michelangelo, and in the interior he attained a particularly harmonious effect.

Bartolommeo Ammanati, a pupil of Sansovino, was at work during the second half of the sixteenth century principally in Florence, where he built many private houses, the courts of which are adorned with porticoes. His chief works are the Great Santa Trinità bridge over the Arno and the court of the Palazzo Pitti.

The small Palazzo Riccardi at Florence, built in 1565, is a work of

Bernardo Buontalenti, who also erected the entrance-hall of the hospital (Ospedale Sta. Maria Nuova) in that city.

Church of Il Gesù.—Among the most conspicuous churches at Rome built in the second half of the sixteenth century is that of Il Gesù, erected by Vignola in 1568. This has a tunnel-vaulted nave with a row of chapels on each side, a cupola, and tunnel-vaulted transepts and choir ending in an apse—an arrangement which henceforth, particularly with a façade having two towers, was for a long time predominant, and which to a certain extent put a stop to the individual endeavors of the masters of the Renaissance to work out a suitable form of church. It was, in fact, a new ideal for the Church, corresponding with the taste of the times. It does not differ very widely from that of the Middle Ages.

Though these churches were not carried so high as the French cathedrals of the mediæval times, the massive pilasters gave them an aspiring effect. The ample space of the nave formed a fit place for the reception of a great assemblage in front of the pulpit, where each could see the Host as it was brought to the altar. In the side-chapels individuals could carry on their devotions undisturbed or several priests could read mass at the same time. The light falling from the cupola and the lighting of the separate chapels, as well as of the principal aisle, transepts, and choir, are extraordinarily effective—almost theatrical. The arrangement, which would be sober for simple forms, could by pompous stucco-ornamentation, such as was executed at a later date, be caused to make a bewildering impression.

But this almost theatrical pomp is expressed in the entire spirit of the following period. Not simple earnestness, not modest dignity, but great expenditure, was what dazzled and fascinated, which in union with the mystical effects induced by the mode of lighting captivated the eyes and hearts of the people. The sombre nave led the eye upward to the light of the cupola, where the sculptured and painted heavenly choir seemed to move to and fro and to join in the hymn of jubilant praise whose clear notes were intoned rapturously through the halls while the clouds of incense arose on high. It was, in fact, the taste of the period which found expression in that church-arrangement with which Vignola in the Church Il Gesù closed the attempts of individual artists.

Andrea Palladio was active in Vicenza at the same time with Vignola. In his lifetime he was but little distinguished above his contemporaries, but, like Vignola, he exercised great influence through the preparation of a system of the orders. He endeavored to give his structures an imposing effect by grand proportions and colossal ranges of pilasters, which rose through several storeys. He produced his effects exclusively, not by expressing the interior arrangements, but by the importance of the parts. He had to erect his buildings of brick, but he covered them with stucco to form massive-looking rustications, and constructed colonnades whose entablatures he formed of wood in classic form. The Palazzo Tiene of

1556-1558 is partly under the influence of Giulio Romano's works at Mantua. The Palazzo Chiericati (1566; now the Museo Civico) has two ranges of half-columns, which are continued at the sides as open halls. In the Palazzo Valmarano (1566) there is a reminiscence of the antique temple-pediment in the form of six great pilasters, rising through two storeys, placed in front of the façade, whose entablature is broken around them. The meaning of this arrangement is not clear to the unarchitectural eye, as the façade is only one bay longer on each side and the want of the great pilasters at the angles is greatly felt. Only an antiquary can tell what the artist intended. An attic affords a third storey.

The Palazzo Barbarano (1570) at Vicenza is richly decorated, as is also the Palazzo Prefettizio, or Loggia del Delegato. The Teatro Olimpico was built in 1584 according to Palladio's designs, and is an imitation of an antique theatre. S. Giorgio Maggiore was built in 1560, and the Church of the Redeemer at Venice in 1576 (*pl.* 40, *fig.* 5). The façade of the latter reminds us of the ancient temple-façade, which is completely realized in the villa shown on Plate 43 (*fig.* 7).

Pellegrino Tibaldi built the court of the archbishop's palace as well as the Palazzo Magnani at Bologna and the court of the archbishop's palace at Milan, and he also added to the façade of the cathedral at Milan the portal and the magnificent windows, which, however, mar the harmony of the arrangement. The Villa Medici, erected by Annibale Lippi on the Monte Pincio at Rome, has open arcades between tower-like, elevated angle-buildings and rich plastic adornments. In 1582, Scamozzi commenced the Procuratie Nuove (now the Palazzo Reale) at Venice.

The form-development of the Renaissance, that second birth of antique art, had made a long stride forward. From a refined delicacy of detail it had passed on to an exuberance of strength which was perhaps more antique than that delicacy, but only in the sense of the last period of the antique—that of its decadence. From a characterization of the whole which permitted the meaning of each part to be expressed, it had led to the *ensemble* in which each characteristic of the several parts was hidden behind an empty screen of forms. The attempt to gain effect through imposing masses had given rise to a confusion of conventionalisms which was augmented through the attempt of each master to surpass all others. Michelangelo had already shown the way to this through the excess of his originality, and after his death two decades had scarcely passed before a deeper decadence set in, the beginning of complete degeneracy. Before we can follow architectural development farther in this direction we must cast a glance over other countries.

Italy had in the course of the fifteenth century become practically the centre of intelligence, and exercised a powerful influence on all other nations through the flourishing condition of its sciences. The cultivation of classical literature, the desire to create a new literature founded upon the genius and the forms of the ancient, were everywhere more or less progressive. Young men ardent for knowledge flocked from all nations

to the Italian universities, and, while in earlier times only campaigns or pilgrimages brought the natives of other countries into Italy, now they came to see the land whose nature was considered marvellous—the land that was the home and the theatre of that wondrous ancient world and its grand deeds, the land that had given a new culture to mankind. The renovated, the resurrected old captivated the eyes, and the fame of the art-supremacy of the Italians was not less than their scientific celebrity; so that the former soon extended its influence to other lands, as had been the case with the latter.

2. SPANISH RENAISSANCE.

Spain was the first country into which the new style penetrated. Enrique de Egas built in 1480 the College of Sta. Cruz at Valladolid, and in the same city, in 1488, there followed the Colegio S. Gregorio, which is particularly charming from the richness of its detail. In these structures we find only certain antique details mixed with Gothic and Moresque elements. In 1504 the same master constructed the portal of the foundling hospital at Toledo, which has a tympanum richly adorned with sculptures and enclosed in a round arch. In 1521, Ibarra built the Colegio Mayor at Salamanca, and at the same period the Casa de los Muertos and the Palace of the Marquesa de las Naves were erected in the same city.

In 1526, Charles V. permitted a portion of the Alhambra, at Granada, to be taken down that a palace might be executed after the plans of Machuca. In this structure the classical style already appears in tolerable purity. The principal portion is a circular range of Doric columns, with an Ionic one above, surrounding a court. (See ground-plan, *pl.* 21, *fig.* 6.)

In 1529, Diego de Siloe began the Cathedral of Granada in strict classical style; that of Malaga is also ascribed to the same master. The chapter-house of Seville Cathedral, built by Diego Rano in 1530, shows also a classical construction, while the royal chapel built in 1531 by Alonso de Covarrubias in the Cathedral of Toledo has indeed the principal details antique, but among them the varied forms of the Christian mediæval period are brought in with exuberant splendor.

The sacristy of the Cathedral of Seville (1533) and the city-hall (*ayuntamiento*) of the same city also allow this mixture of forms to appear in the most elegant manner, while the archbishop's palace at Alcalá de Henares, built (1534) by the above-mentioned Alonso, shows a pleasant court similar to those of Florence, with Corinthian-like capitals and round arches with antique profiles, having above them a second storey of similar columns, the latter surrounded by an architrave which carries a roof. The court of the Convent of Luziana is similar; this is surrounded by four storeys of colonnades of considerable dimensions, some united by round arches, others by trefoil arches, while still others carry an architrave. The collegiate church at Osuna has a magnificent portal of the year 1534. The Alcazar of Toledo (1537) recalls the façade of the Farnese Palace at

Rome, and it may therefore be asked whether a later alteration has not intruded into the work of Alonso de Covarrubias. The fine cloister built (1546) by the same master at S. Miguel de los Reyes in Valencia is, however, still intact.

The façade of the Convent of S. Marcos at Leon is in the full bloom of the early Renaissance, as is also the richly-adorned cloister of S. Zol at Carrion, both works of Juan de Badajos. The severe and inharmonious triumphal arch erected by Charles V. at Burgos in honor of Fernan Gonzalez, and the Cathedral of Jaen, built by Pedro de Valdelvira, are works of the classical style. Less strictly so are the Colegio S. Nicolas, the transept of the cathedral, and the Casa del Cordon at Burgos, the famous Chapel de los Beneventes at Medina de Rio Seco, and the Carcel del Corte at Baeza.

With even greater coldness the classical style is displayed at the Convent S. Lorenzo of the Escorial, begun in 1563 by Philip II. according to the plans of Juan of Toledo, who died in 1567, leaving its completion to his pupil Juan de Herrera. The Cathedral of Valladolid, the south side of the Alcazar of Toledo, the Bolsa (Exchange), the palace at Aranjuez, and the Casa de Oficios at Seville, are all the works of Herrera. In these Palladio's influence is manifest, as it is also in the works of Herrera's contemporaries and immediate successors.

3. FRENCH RENAISSANCE.

Italian masters were summoned to the court of France as early as the reigns of Charles VIII. (1483-1498) and Louis XII. (1498-1515), but it was chiefly Francis I. (1515-1547) who by his zealous advocacy brought about a reformation in Architecture and won France over to the Renaissance. Since there were summoned to France such prominent Italian masters as Leonardo da Vinci, Benvenuto Cellini, Serlio, Primaticcio, etc., it is indeed surprising that only certain Italian forms and motives obtained acceptance, that the entire arrangement of the structures followed the traditions of the fifteenth century, and that the new art-speech found application in outward ornamentation only. Without doubt these masters worked more in the line of other arts than directly in Architecture, and it may be that some of their works—in which the Italian manner appeared conspicuously—have disappeared; but the conditions of life in France as a whole differed from those of Italy, and the French Late Gothic, which had found an entirely characteristic expression, was too powerful to permit the new style to predominate except in the decorative arts. Thus the *ensemble* of the edifices is that of the Late Gothic works.

The striving after high and wide spaces became even less than in the earlier period; the high, broad hall in which the feudal lord assembled his retainers diminished in importance, while the small dwelling-rooms gained, for a dwelling needs only moderate height. Nobility of proportions had not belonged to the French Late Gothic, and in the French Renaissance also we find bizarre rather than noble proportions.

The Churches—which were only of subordinate importance, as the works of the thirteenth century still sufficed for the requirements, since even their completion, after the eye for hundreds of years had been accustomed to see them as incomplete as a torso, was not taken to heart—were built according to the mediæval system, which was so firmly established that no one imagined it possible to erect a church according to any other plan. Therefore only purely external classical forms were used as an outward decoration.

Structures of the Sixteenth Century.—No works of the fifteenth century which had their external decoration in the new style are extant—or, at least, are known; therefore the new forms begin with the sixteenth century. The Château Gaillon (1502–1510) is indeed destroyed, yet a remnant rebuilt in the court of the École des Beaux-Arts at Paris shows low storeys in which semicircular arches are not yet employed; so that the low reversed curved arch, which is common also in the Late Gothic of France (*pl.* 37, *figs.* 1, 6), appears among the new forms. The Palais de Justice at Dijon belongs to the same early period, and has also a mixture of old and new forms, as is likewise the case in the Château Chenonceaux (1515–1523).

The Château Bury, also begun in 1515 (*pl.* 44, *fig.* 8), has the ancient round towers of the previous period. These, however, no longer serve simply for defence, but have great windows in the fashion of the time and are prepared for habitation. The entire main building no longer recalls the castle, but has high roofs, gables, and windows reaching to the cornice, above which are dormers enriched with fanciful gabled decoration, just as in the palace of Late Gothic times.

The Château Blois, begun in 1516, allows the mixed architecture to appear still more plainly in a pleasing want of harmony—pleasing because the naïveté of the mixture, the richness and the ornamentation of the details, completely disarm criticism, and almost make up for the absence of what theory may consider correct. How can the sloping lines of the staircase (*fig.* 6) be in harmony with the pilaster architecture? How can the Gothic recurved arches, the baldachins, the gargoyles, be in harmony with the purely decorative elements of the pilaster ornamentation? The massive cornice—partly a reminiscence of the projecting water-table—weighs upon the light pilasters and entablature most inharmoniously, and yet how charming is the effect, since it is so characteristic and shows us how the old and the new were commingled at the court of Francis I.!

The blending of antique and modern elements is effected in the most highly-original manner in the Château St. Germain, which Francis I. caused to be rebuilt, retaining at the same time a portion of the mediæval work. Here massive buttresses of brick form the frame in the court, and between these the arcades are inserted. Gothic elements come out strongly also in the choir of St. Étienne du Mont at Paris, built in 1517–1541. Only isolated Renaissance elements are mingled here, but in the

remainder of the structure these come out more strongly, and in the tolerably late façade (including also the yet later additions, *pl.* 45, *fig.* 6) are completely predominant.

Tomb of Louis XII.—Soon after the death of Louis XII. his successor, Francis I., had a magnificent tomb erected for the former. Jean Juste was the sculptor of this work, which was set up at St. Denis in 1518 (*fig.* 8). The figures of the apostles below are additions of a later time. In the architecture the master has evidently held closely to Italian art, and the Renaissance is here brought into play without admixture with mediæval elements.

The Hôtel d'Anjou at Angers exhibits an elegant Early Renaissance of about the date 1520. The châteaux at Azay-le-Rideau, on the Indre, Bénéhart, Lude, St. Amand, and Perché are distinguished by the rich architecture of the roof-gables and dormers. The last has Gothic gables with pinnacles and grotesques, but it is also provided with Corinthian pilasters. The châteaux Châteaubriant and Nantouillet (*pl.* 44, *fig.* 5) show the mixture of both series of forms. The choir of St. Peter's at Caen (*pl.* 45, *fig.* 1), begun in 1521, has an entirely Gothic system of construction, but in its decoration it is as completely Renaissance. Among the charming works into which Gothic decoration—or, at least, a reminiscence of it—enters more or less among the Gothic constructional forms, we may mention the Château of Sandifer, with its four round angle-towers, its pilaster-adorned windows, each with a mullion and transom, and its richly-decorated roof-balcony as a finish to the walls; the Château Rocher de Mésanger, with flat arches in the arcade of the court and fancifully-terminated balcony; and, lastly, the ducal palace at Angers.

Château Chambord.—In 1523, Francis I. began the erection of the Château Chambord, the main building of which is shown on Plate 44 (*fig.* 2). Pierre Nepveu, called Trinqueau, superintended its construction. The entire design both of this principal building, which was enclosed by a rectangular court, and of the wings enclosing this court and flanked on their angles with round towers, recalls the mediæval arrangement. The low storeys and the lofty roofs with their gables and chimneys belong to the older period, but the form-system of the decoration is entirely new and shows how exquisitely this new system can be adapted to the romantic older ground-plan. The lantern over the staircase, which occupies the centre of the main building (*fig.* 10), is especially charming, as are also the chimneys, which are decorated with tabernacle-shaped niches and every conceivable ornament. The roof—or, properly, the roofs—rise independently in the interior above a terrace which extends around the entire building—a survival from the strong castle of mediæval ages.

Among the churches of this period is St. Pantaléon at Troyes (1524), whose columns are Corinthian, while the vaulting is Gothic. St. Michael's at Dijon exhibits a complete façade of this epoch, with three round-arched portals and a lofty gable between two towers. St. Nicolas's at Troyes (1526) has Gothic radiating vaulting, which is in part adorned with free

tracery pendent below it; here Gothic construction predominates. In other cases, as in the Palais de Justice at Orléans (*pl.* 45, *fig.* 7) and that of Beaugency (*pl.* 44, *fig.* 3), Gothic motives intrude even into the decoration of secular structures. The mediæval window-arrangement with narrow lights, stone mullions, and transoms endured longest, as in the so-called "House of Francis I." at Fontainebleau, which, with some alterations, has lately been removed to Paris (*fig.* 9).

Château Madrid.—Gothic motives occur also at the Château Madrid, which Francis I. had erected in 1526 in the Bois de Boulogne near Paris, and which, though unfortunately destroyed during the Revolution, is known, from drawings still preserved, to have been devoid of mediæval character except in that high roof of the North which France even later would not give up (*fig.* 1). The arcades—two storeys of which surround the edifice—show clearly the Italian influence, as does also the height of the storeys, which is about 7 metres (23 feet). The architects, Pierre Gadier and Gratien François, the latter of whom carried on the building after Gadier's death, in 1531, were, however, both Frenchmen.

The Château of Fontainebleau, also a work of Francis I., exhibits more completely the forms of the Renaissance, though, indeed, that naïveté is absent which seems so pleasing to us in the works of the mixed styles. The small Château of Sansac, near Loches, belongs to the year 1529. On a corner of the Rue du Palais de Justice at Troyes there is a house built in 1531 which has a charming oriel and an elegant courtyard. Orléans and Blois show many examples of similar houses.

The Church of St. Eustache at Paris was begun in 1532. Its arrangement is completely Gothic, with the entire apparatus of buttresses and flying-buttresses clothed in the wire-drawn proportions of ultra-artificial Renaissance forms as in an unsuitable vestment, although some of the details are very charming. The impression made by the wild forms of a degenerate tracery which fills the round-arched windows is very displeasing.

Hôtel de Ville.—Most attractive, on the contrary, is the architecture of the Hôtel de Ville at Paris, which was begun in 1533, but on which work was afterward suspended until 1549, when it was resumed by the Italian Domenico Boccardo after a plan of his own. Notwithstanding the foreign birth of its architect, it exhibits entirely French peculiarities. The edifice had, indeed, a long history down to its completion in 1841 and to its reconstruction in 1871; and when examining the view on Plate 45 (*fig.* 2), we must not forget that there have been many changes in various parts of Boccardo's plan.

The Hôtel Ecoiville, at Caen (1535), may be cited as in many respects one of the most charming works of the early French Renaissance. Nobility in the proportions of the details here reached its highest point; forms foreign to the Renaissance are already eliminated, and all that remains from the older period is that which can be readily assimilated and worked into a harmonious whole (*pl.* 44, *fig.* 4). Two examples of the ornament

of that date (*pl.* 44, *figs.* 11, 12) exhibit, the first the specifically French manner, the second a nearer approach to the Italian.

About the middle of the century the poetry gradually disappeared from the French Renaissance, and the so-called "House of Agnes Sorel," at Orléans, shows the prosaic nature which characterized the French *bourgeoisie* of that period, while the bishop's palace at Sens exhibits the somewhat grander proportions aimed at by the clerical dignitaries of France.

At that period the display of a more strict classicality was attempted in the grand palaces. This induced, on the one hand, freer proportions; on the other, a magnificent but purely external artistic development of the façade. The ideal was like that at which Italian architects had aimed at the beginning of the century. It was not, indeed, so magnificent, nor was there so much striving after massiveness and simplicity of outline: there was only an endeavor to remove the last old survivals, while there was still an adherence to the custom of breaking the great masses into smaller portions. French edifices of this date present a central building with higher and lower wings, a sky-line enlivened by varied forms of gables, and finally, drawn over the whole, a screen of architectural forms simply decorative and calculated to produce an impression of richness and elegance.

The Louvre.—This new purpose found expression in the construction of the Louvre, which Francis I. began in 1528 in the place of the mediæval castle which then occupied the site. Pierre Lescot superintended the construction after 1546; this older portion is shown on Plate 45 (*fig.* 3). On the river side Lescot built the so-called "Small Gallery," over which was the Galerie d'Apollon, and he also commenced the Long Gallery, which is more than 400 metres (1322 feet) in length. This palace, like other great buildings, has had manifold vicissitudes, and was not entirely finished until very recently; so that we have shown the united Louvre and Tuileries on Plate 50 (*fig.* 6) as a building of the present period. While it is clear from the above-mentioned characteristics, and can be seen in the illustration, that the poetic glamour of the earlier decades no longer surrounds the structures of this period, yet the Château d'Ecouen (1541; *pl.* 44, *fig.* 7) exhibits a positive severity and an application of strictly classical *motifs* which can have resulted only from a study of ancient art in Italy.

A prominent architect of his day, Philibert de l'Orme, built (after 1552) the Château Anet for Diana of Poitiers (*pl.* 45, *fig.* 9); in this also the severe classical element prevails.

The Tuileries.—De l'Orme commenced (about 1564) the construction of the Tuileries, a magnificent palatial design surrounding one large and four small courts, yet it was incomplete in execution, and was subsequently remodelled. The system (*fig.* 5) used by him exhibits in the arcades of the lower portion a relationship with the Italian order, but in the preservation of the transoms and mullions of the windows, as well as in the varied arrangement of the sky-line, it evinces French taste.

Elegance of form and richness of details are characteristic of the lower portion, and, in so far as this deviates from both the Italian and the antique, De l'Orme was justifiable in designating the system invented by him as "the French order."

Characteristic of this French order is the treatment of the shafts of the columns (*pl.* 45, *fig.* 10), that have their unity destroyed by projecting blocks which run through both piers and columns, yet which were meant as a membering and decoration of the piers following naturally upon his mode of treatment, to which even the pilaster was necessarily forced to submit. The Italians had, indeed, already employed such blocking-courses in the treatment of both columns and pilasters (Palazzo Bevilacqua), but the perfecting of the details was reserved for the French. The ancients had used caryatides only exceptionally; the French idea was to employ them even more frequently than Michelangelo and his imitators had done, and to unite them in picturesque groups, as in the pavilion of the Louvre, or to employ in their stead the Hermes with a base narrower than the upper part (even at the Château Chenonceaux, where they are perhaps a later addition). De l'Orme's successor at the Tuileries was the before-mentioned Bullant.

Jacques Androuet and his brother Baptiste du Cerceau had previously gained celebrity through their publications. The son of the latter was Les-cot's successor at the Louvre, and erected, under commission from Henry IV., a part of the gallery which bears that king's name. While in the eastern part (*fig.* 4) he followed the system adopted in the Louvre, the western part has pilasters that run through two storeys, somewhat as they were applied by the Italians, who added an *entresol* in the height of a pilaster, or, as at St. Peter's, used a single pilaster—which actually corresponds to a single storey—through two rows of windows, which gave the aspect of two storeys, until finally Palladio provided two complete storeys with only one pilaster.

4. GERMAN RENAISSANCE.

In Germany no court was powerful enough to introduce the new style. Isolated instances were not wanting, but its general adoption could have proceeded only from the heart of the people, who, however, clung tenaciously to old traditions, and whose peculiarities had found definite expression in the Late Gothic; so that they could neither comprehend the new style nor warmly welcome it. Purely artistic though the Late Gothic in many respects undoubtedly is, it yet was not evolved out of the intention to attain artistic beauty in an ideal sense.

The genius of the Germans was not so ideally constituted: quaintness satisfied their wants, and they accepted naturally as quaintness the bizarre ornamentation with which the master played who found its employment quite natural because he had so learned it in his workshop. But whatever was in this manner given and accepted as quaint must have always

sprung from the essence of the national genius. The contrast between the Germans and the Italians is thus anew brought clearly before the eye.

The influence of classical studies—which tended to revive the genius and sense of the ancient paganism that had been subverted by Christianity—was, whether consciously or unconsciously, the antithesis of the teachings of Christianity, and was the sole cause which led Italy to take up again the classical art-forms; and it followed as a necessary consequence that their entire restoration, so far as outward circumstances and the genius of the people would permit, must be the result.

This spirit had taken hold of a great part of the people of Italy. A gulf had long separated the views of the higher classes, ecclesiastical as well as secular, from those of the great mass of the people: a “cultured” class, in the modern sense, had been developed that had increased in Italy and had embraced all the higher ranks. Not so in Germany, where even the higher classes had remained true to the forms and beliefs of the people—where even the refinements which were proper to each form of culture according to the degree of its development were at home not only in the ranks of the great, but also in those of the *bourgeoisie*, who were equally conspicuous in all the good and inferior qualities of conservatism.

Restricted Acceptance of the Renaissance.—Thus in Germany only isolated elements tended toward that new style which had developed quite independently among the neighboring people—that new style which had been evolved calmly and without effort into a national peculiarity of the Italians, but which in consequence of the different climate and genius of the Germans had been viewed by the latter without the inclination to give up the accustomed style. Still, those classes who were in positive contact with the Italians were compelled to receive impressions from their neighbors. The imperial court was one. It was not accidental that the emperor Maximilian had an intelligent love for the beautiful, and that he cherished it for its own sake: this was through the influence of Italy and Burgundy. It was not chance that the artists in the perfection of whose skill he was interested experienced an ardent desire to see Italy and its works of art. German artists were not accustomed to visit Italy; and if any had previously been led thither on the pilgrimage usual to the guilds of all the trades, they had brought back no definite impression. But the power of the imperial court was small in Germany, and its influence was still smaller; the emperor himself was therefore compelled to follow the bent of the German burghers, and could not wander into ways he would certainly have taken had not he and his followers become possessed of the prevalent German conservatism.

On the confines of Germany and Italy, in the Tyrol, the new style naturally exercised a deep influence at an early date, but this is so natural that this offshoot of Italian art is of little importance, since even the boundaries of the language are so variously intermixed that the termination of the Italian elements can scarcely be fixed.

As immediate eastern neighbors the Polish and Silesian kingdoms not

only had maintained their independence, but also had developed powerful governing dynasties. The German *bourgeoisie* which filled all Poland, which gave to the state a solid centre, had never enjoyed political influence, and at about the turn of the fifteenth and sixteenth centuries stood in abrupt contrast to the Polish national genius, at the head of which appeared the kings, especially Sigismund I., who forced Italian influence into the foreground in opposition to German ideas, which he strove to bear down or to "Polonize."

In the introduction of Italians and Italian ideas Sigismund saw the only way to set up a Polish genius distinct from the German, and thus to give to Poland an apparently national expression. Silesia was but a more Germanized part of Poland, and its dukes, descended from the same race as the Polish kings, were their vassals in a moral if not in a political sense. Many Polish elements still existed in Silesia; so that the new ideas brought into Poland and developed there found a certain echo in Silesia also, and thus an entrance was secured for Italian art. But, while there were German artists who derived from Italy the incitement to spread widely the forms of Italian art in Germany, in Poland, where previously all artistic and industrial activity had been in German hands, masters were brought from Italy and placed in opposition to the German, and Silesia followed this example.

Earliest Renaissance Forms.—The oldest presentation of actual Renaissance forms in Germany may perhaps be found in Wladislaw's Hall in the Imperial Castle of Prague. The wonderful Late Gothic vaulting of this hall stands in direct contrast with the great windows, which have decidedly Italian forms and bear the date 1493. Whether Master Benedict of Lann himself inserted these, or whether it was done by an Italian in his employ, must remain undetermined. The stone crosses made by mullions and transoms indicate the Bohemian master rather than the Italian. Austria presents another work of the fifteenth century in a portal at the so-called "Federlhof" at Vienna, bearing the date 1497. Breslau contains, besides Late Gothic works, a number of smaller monuments that exhibit Renaissance forms, particularly mortuary memorials of the close of the fifteenth and first years of the sixteenth century.

Sculpture, wherever it rose above mere mechanical skill, soon adopted the new forms. Thus the famous tomb of St. Sebald at Nuremberg (1508–1510), by Peter Vischer, has only the traces of the decorative finish of the Gothic, while the characteristics of the Renaissance appear in overflowing fulness and are employed with a harmony, a delicacy, and an attractiveness which not only prove the talented artist, but also speak of earnest studies in Italy. In the altar-piece also which Albrecht Dürer designed as a frame for his famous picture of the Trinity for the Landau Convent at Nuremberg (1511; the design was made in 1508) the Renaissance has, with the exception of some slight traces, overpowered the Gothic.

Printing.—But it was chiefly the painters who in their pictures and engravings brought the new style into repute in the first years of the six-

teenth century wherever Architecture or the industrial arts presented materials. Thus, Renaissance forms occur in the works of the painter Burgkmair as early as 1502-1507. Dürer and others about the imperial court employed these forms very early; Hans Holbein the younger also exhibits from the beginning his preference for the forms of the new style.

We should certainly guard against seeking, in the occurrence of each individual form-*motif* like those we meet in Italy, the existing variance between the older and the more recent currents of art, since Late Gothic art could assimilate many elements without discordance, and its entire development was only the continual reception of isolated elements whose origin may be traced to various regions. Here, however, where a complete contrast between the two form-cycles existed, only that must influence our judgment which is expressed in those characteristic forms that give definite expression to this contrast. We cannot here consider forms as conclusive, but only architectural arrangement and ornament, because in form-styles the tendency toward naturalism, toward greater freedom of conception, manifests itself throughout the whole of the fifteenth century—a development which under any circumstances must finally have led to similar results.

In decorative design and arrangement various directions are manifest in Germany from the beginning. Now an Italian is the architect, now a prominent German master who had studied in Italy, or again a German who, familiar only indirectly with the new style, had adopted certain peculiarities. The last class of masters desired to show their ability by exaggeration, and the greater or lesser delicacy of the candelabra-like columns is certainly a test of the extent of their skill.

The escutcheon with Renaissance framework, for example, bearing the date of 1509, which was set up at the Castle of Johannisberg, in Silesia, belongs to the province of the lesser works of art, and shows the hand of a German who brought out and greatly exaggerated the fantastic elements which still existed to some extent in the Italian Renaissance of the fifteenth century.

The upper part of the tower of the Church of St. Kilian at Heilbronn (1513-1529), built by Hans Schweiner of Weinsberg, is the first great monumental work in Germany, outside Austria, in which the new style was actually practised, while in Poland an Italian architect had already (1512) been summoned to finish the castle at Cracow. But the forms which Master Schweiner employed are very wild and confused, and show in their gross fantasticality no trace of that delicacy of form that distinguished the Italian edifices which he may have studied to some extent. But the portal of the Chapel of St. Salvator at Vienna (1515), with its candelabra-like columns, appears by its harmony of forms and the elegance of many details to be, if not the work of an Italian—of whom many can be authenticated as active in Austria—the work of a German who had obtained his inspiration from original sources.

The Renaissance was first brought into Switzerland by painters who

adorned the façades with their brilliant colors, and who thus often worked in contrast to the intentions of the Gothic architect. Among the earliest of these paintings must be reckoned those which Hans Holbein executed in 1516 in the Hertenstein House at Lucerne; of the same year are the wall-paintings with many Renaissance *motifs* at Stein, in Switzerland. A portal in Renaissance style leading to the sacristy from the aisle around the apse of the cathedral at Breslau bears the date 1517. At the Town-hall of Freiburg in Breisgau the date 1518 occurs on a Renaissance shield, so that the various Renaissance elements which mingle with the Gothic belong to that date.

A larger structure in the new style is the parish church at Ratisbon, erected between 1519 and 1538 by the Augsburg master Hans Hiber. Only the choir, with the two towers, was executed, while a magnificent polygonal structure which would have formed the church proper was never finished. Also the windows of the cloisters of the cathedral—perhaps a work of Wolfgang Roritzer—show in their framework the fantastic candelabra-like columns of the Italian Renaissance with measureless exaggeration. The Renaissance reached Würzburg in the tomb of Bishop Lorenz von Bibra (1519), constructed by Tilman Riemenschneider. The episcopal residence at Freising, built in 1520, is exteriorly quite simple and unadorned, since the façade was intended to be covered throughout with wall-paintings. In the court is a gallery in which Gothic and Renaissance are mingled. The Jagellon chapel at the Cathedral of Cracow was, however, erected by the Florentine master Bartolommeo in the noblest forms of the Italian Renaissance; a round dome with a lantern above a square space bears the date 1520. The Tucher Monument, in the Cathedral of Ratisbon, executed in 1521 in Peter Vischer's foundry at Nuremberg, shows decided and pure Renaissance forms. Gothic elements mingled with some of the Renaissance are exhibited in the Leinwandhaus at Breslau; the Renaissance brings to mind Venetian models. The beautiful portal of the arsenal built by Ferdinand I. at Vienna-Neustadt (1524) is probably the work of an Italian.

Spread of the Renaissance.—The new style now continually widened its boundaries and became more and more generally accepted. In almost all parts of Germany church dignitaries and chapters were henceforward in unison with the Italians.

The oldest Renaissance-work on the Rhine is probably the lectern of St. Maria in Capitulo, which was executed at Mechlin in 1521, and set up at Cologne. A decided promoter of the new style was Albrecht of Brandenburg, archbishop of Mayence, who in 1525 had caused the erection for himself of a sepulchral monument in the collegiate church at Aschaffenburg; Peter Vischer was employed to execute the work. The beautiful Judenbrunnen ("Jew's Fountain") which he constructed at Mayence in memory of the battle of Pavia dates from 1526, and of the same date is the pulpit which he placed in the collegiate church at Halle, where in 1529 he began the old episcopal residence.

The monument of Frederick the Wise at Wittenberg (1527) indicates the extension of the style. The chapter-house at Breslau dates from 1527; the construction of the castle at Liegnitz was begun between 1527 and 1529, and its portal bears the date 1533. The town-hall at Breslau and the interesting house "Zur Krone" in the same city date from 1528.

The Landhaus (council-hall of estates) at Gratz belongs to the first decade of the sixteenth century; it is decidedly Italian, the façade recalling the older Italian period, while the court is allied to the Italian works of the sixteenth century. The Castle Porzia (formerly Ortenberg) at Spital, in Carinthia, is also an Italian structure.

The Castle of Dresden was commenced in 1530, and the "House of the Golden Tree" at Breslau—of the older decoration of which only a relief is now left—was built in 1532. The Castle Hertenfels at Torgau was, according to its inscriptions, built between 1532 and 1544.

The beautiful tomb which Stanislaus Sauer caused to be erected for himself in the southern transept of the Church of the Holy Cross at Breslau dates from 1533, and that which the imperial counsellor Rybisch built in St. Elizabeth at Breslau belongs to the following year.

Tucher Villa.—From the same two years date the first great monumental structures which were erected at Nuremberg in the Renaissance style. One of these is the Tucher Villa (1533), in which forms almost Gothic still prevail, while only a few, but pure and charming, Renaissance elements occur—as, among others, the beautiful oriel on the street side, which is executed entirely in Italian forms, although in general the oriel is a German feature not known in Italy. The Hirschvogelhaus, with its beautiful architecture (1534), must certainly have been executed under Italian influence.

The Belvedere, a villa which Ferdinand I. commenced at Prague, is the work of the Italian master Paolo della Stella. It consists of a ground-floor surrounded by vaulted arches on Ionic columns, and a great hall on the first floor with an open gallery around it above the arcades. The grandeur and nobility of the proportions of this edifice, particularly of the porticoes, make it appear worthy of mention by the side of the noblest Italian works of the fifteenth century. The details, particularly the mouldings and roofs of the upper windows, are to some extent original, to some extent founded on Bramante's architecture, and prove that the master took that artist in a degree as his model. The structure must have been discontinued in 1541, and could not have been resumed until 1556; it was roofed in 1568. The interior decoration was finished about 1589, though probably what now remains is not of that date, since in its original condition it appeared unsatisfactory to the art-loving Rudolf II.

Some charming works date from the years 1534–1537, particularly the open staircase, with its portal, and the court of the town-hall at Görlitz. The older portions of the town-hall at Heilbronn date from 1535, and the works at the Castle Trausnitz, near Landshut, are of the same date; also the castle at Tübingen, which the duke Ulrich had commenced in the old

style in 1507. During the troubles of his reign the works were discontinued, but in 1535 were resumed and zealously prosecuted; so that by 1540 over sixty-four thousand florins had been expended, and yet the succeeding dukes found sufficient work to do.

Albrecht of Brandenburg (1536) erected the majestic baldachin over the tomb of St. Margaret in the collegiate church at Aschaffenburg, one of the most prominent works of Peter Vischer's foundry. The palace at Landshut was erected by Italian masters (1536-1543) in the Italian Renaissance verging on *barocco*¹ which was then current in Italy. The pilasters run through two storeys, and the rustications of the ground-floor, with the alternating curved and straight-lined gables, are such as were employed by Raphael and Giulio Romano, from whose schools the masters had come. A corner house on the principal street of Old Colmar bears the date 1538; it has an oriel on the angle, a widely-projecting woodwork gallery in front of the uppermost storey, and paintings on the façade, with many mediæval traces among the Renaissance forms. The castle at Neuburg, on the Danube, bears on different parts the dates 1538, 1541, and 1545, which thus show the time of their erection. The town-hall at Leitmeritz dates from 1539.

This series of the oldest Renaissance buildings of Germany is not complete, but even the complete series is not large, since so many purely decorative works must be enumerated to show the naturalization of the Renaissance. Though some larger castles are included, these are devoid of the importance of the French works of that date. It is to be noticed that many works were executed directly by Italians, and, above all, it must not be forgotten that the Gothic style held its sway almost unchanged and unretrenched. The imperial court and the artists favored by it, some cathedral chapters and ecclesiastical dignitaries, some secular princes whose policy and religious views were leagued with Italy, were the chief supporters of the new style; some commercial cities having direct relations with Italy followed next; but it was with difficulty that it found entrance among the circles which were distinguished as supporters of the truly German genius.

The Reformation.—At that time, also, the great struggle had broken out which placed Germany and the German burgher-spirit in opposition to Italy—namely, the Reformation, to which the development of Italian art had indirectly given the impetus. German money procured from the sale of indulgences helped to build St. Peter's at Rome. Albert of Brandenburg, archbishop of Mayence, was the principal collector; he sent out Tetzl, who roused Luther's anger and provoked him to the contest. The greater gayety of the Italians, which was shared even by the highest dignitaries of the Church, the ideas bordering on frivolity which were current in these circles, were what first brought discord into Germany and occasioned the earnest, inwardly-pious Germans to clamor for a complete

¹ The German *Barock* corresponds to the Louis Quatorze style, the word "*rococo*" being reserved for that of Louis XV.—ED.

reform of the Church from head to members. The clamor rang unheard in the ears of those church dignitaries for whom religion was an empty outward form, whose scepticism had led them to adopt the views of classical paganism. Against them and their world rose the German spirit, which strove to preserve and to purify Christianity and longed to extirpate as corruption the external pagan forms which the Renaissance had established in the guiding circles of the Church. The spirit that longed to do all this could not accept the series of forms that seemed to be the most vivid expression of that against which it fought.

Effect of the Reformation.—It is not our task to describe the work of the Reformation nor to recount how an intended purification of the Church resulted in a separation from it; how classical studies were not ignored by the Reformers, but were even cultivated by them; how they contributed gradually to spread these studies over a wider range; how it was precisely the educated princely class and the ecclesiastical party which adhered to the Reformation—those who by their power helped the Reformation into authority, who brought their intellect and interest to bear in spreading the outward education and refinement of the Italians; how in Germany also the educated class increased, and how their journeys into Italy brought both the spirit and the art of the Italians nearer to those who declared themselves independent of the Catholic Church.

But even the eyes of the people became gradually accustomed to the originally foreign forms which soon underwent a transformation, bringing them nearer to German tastes. They became even more decorative, and so could better adapt themselves to the old methods of construction, which still gave expression to the slightly-changed needs.

Palace-construction.—The construction of churches was first suspended; in isolated cases only it became necessary to build a modest town-church. The reverse was the case with the burghers' dwellings, and still more so with the erection of castles. Soon there was developed in Germany a palace-architecture proper for which isolated Italian structures in Germany, especially the Castle of Landshut, formed the basis. We may first mention the Rybisch House at Breslau (1540), the property of the same imperial counsellor Heinrich Rybisch who had erected for himself a splendid tomb during his lifetime (p. 261), also the Collegium Saxonicum, at Erfurt, founded in 1521, and having an escutcheon with the date 1542; and the old Hall of Justice at Stuttgart (1543).

At the Castle of Heidelberg, Frederick II. (1544–1556) executed a large building which exhibits many Gothic features, but for whose inner decoration stucco-workers were brought from Würtemberg, from which it resulted that the finish and decoration belong entirely to the spirit of the new style. He also caused to be executed in the older portions of the edifice chimney-pieces and other decorative features which display the Renaissance in its most brilliant aspect; such a chimney-piece in the Ruprechtsbau at Heidelberg bears the date 1545. To this year belongs also the Schwarzenberg Palace at Prague, whose façade is adorned

with *graffito* ornaments. The ornate lectern in Hildesheim Cathedral dates from 1546, the Piastenschloss at Brieg from 1547, the house of the Teutonic Order at Heilbronn from 1548. The hall of the Rathhaus at Posen was built in 1550, the small older portion of the Hofburg at Vienna in 1552, and in the same year part of the university at Freiburg in Breisgau, and the town-hall at Mülhausen, in Alsace. In all these Gothic features almost preponderate, and it is only through the rich picturesque decoration that the new style produces most impression.

In 1553 the architect Abertin Treitsch began the erection of the now old castle at Stuttgart—one of the most prominent works of the German Renaissance. In the same year the prince's palace at Wismar was commenced. A characteristic brick structure after the Italian model, this palace continues the traditions of the Gothic brick-construction. The old castle at Schwerin, which has recently been rebuilt with great splendor, dates from 1555; the massive round towers of the Nuremberg fortifications were built between 1555 and 1568, the town-hall at Leipsic in 1556, the Castle of Heldburg in 1558, and the Castle of Güstrow between 1558 and 1565.

Otto Heinrichsbau.—But the most brilliant work of this period is Otto Heinrichsbau (1556), at the Castle of Heidelberg, whose elegant architecture recalls the ornate works of the early Renaissance. Three storeys, each 6 metres (nearly 20 feet) high—an exceptional height for Germany—rise above a high basement. The windows are regularly spaced, two in each of the compartments, which are separated by pilasters, while complete entablatures divide the storeys. In the uppermost floor Corinthian half-columns take the place of the pilasters; between each two windows there is a niche with a figure, and above each niche a console bearing the entablature. The windows have stone mullions decorated with figures of Hermes, while pilasters and half-columns form the lateral framework and bear above the windows an entablature which is also decorated with an ornamental termination. The windows of the lower storeys have pediments, and have also what appears to be a later lengthening, obtained at the bottom below the former sill—probably because their position in the rooms was found to be too high for the purposes of a dwelling.

In its entire arrangement this structure recalls the *Palas* of the great German castles of the twelfth century—an impression that is increased by the grand staircase leading up to the principal entrance, which, emphasized with splendid decoration and borne on four caryatides, adapts itself strictly to the system of the whole and with all its magnificence is devoid of exaggeration. Thus the pre-eminence of the entire creation, which may be called the noblest work of the Renaissance in Germany, depends upon skilful and nobly-artistic proportions and upon a wise disposition of the rich details. This noble artistic refinement—which, it is true, does not approach that of the older Italians, but which is not to be found in other German edifices of the same period—would suggest the opinion that in Otto Heinrich's building we have to admire

the work of a later Italian who yet clung to the older traditions, or that the workmen were Italians, did not the lofty German gables which this structure (*pl.* 46, *fig.* 2) formerly bore prove the contrary.

Decadence of German Renaissance.—Farther on in the century this correctness of proportion diminished more and more in Germany; as the style became more general, the more mechanically was it executed. The mouldings became ruder, the elements more *baroque*, the distribution of the ornaments less intelligible, the ornament itself more mannered. Again that conservatism which formerly characterized the Germans appears in their architecture. But the honest citizen simplicity, the quiet homeliness, which is expressed in the great majority of the burghers' dwellings has something which so breathes of home that we willingly forgive the German *bourgeoisie* that they have erected these buildings not with the intention of making works of art, but to provide themselves with cherished homes suitable to their wants, and that only a few of the rich and the highly educated were acquainted with the more splendid sides of the style.

Of the many works belonging to the close of the century which fill all the German cities, we will name only a few. The tall spire which was added in 1559–1561 to the tower of the town-hall of the Altstadt of Dantzic may be mentioned as a particularly original work. The castle at Oels (1559–1616) and the original tomb of Edo Wiemken (1561–1564), in the church at Jever, may also be named. The latter is a great polygonal baldachin under which stands the sarcophagus, richly adorned with varied sculptures, among which are God the Father, and Christ on the cross, in company with Jupiter, Venus, Minerva, and other gods, and with allegorical figures of the Christian virtues.

The erection of the grand Castle Plessenburg lasted from 1561 to 1599; several German and some Italian architects who had come over from Ansbach were engaged in its construction. About 1563 important buildings were added to the Castle Ambras, near Innsbruck; the Castle Offembach near Frankfort was built between 1564 and 1572, that at Baden-Baden in 1569, the Heiligenberg on the Lake of Constance between 1569 and 1587, in 1570 the beautiful porticoes of the town-hall at Lübeck, that of Schweinfurt (*fig.* 6) in the same year, and in 1569 the entrance-portico to the Rathhaus at Cologne, whose perfectly-systematic Renaissance architecture has yet the foreign element of pointed arches (*fig.* 4), while the Gothic lead-work of the roof does not at all disturb the harmony.

Such isolated Gothic elements are scarcely ever lacking in structures of this period. Thus the Rathhaus at Schweinfurt has an open-work gallery round the roof, the Castle Heiligenberg has radiating vaulting in its chapel, and other buildings have other Gothic features. We have also, again with the same naïveté, the characteristics of the interior expressed externally; for after the German *bourgeoisie* had taken hold of and assimilated the Renaissance they again departed from strict symmetry, and went

back without scruple to those greater and lesser irregularities which were suited to their wants. Even Gothic cannot go farther than to cut oblique windows in the walls just where a staircase had to be lighted, as is done in the Rathhaus at Schweinfurt and in so many other buildings. The town-hall at Rothenburg was built in 1572, that of Gotha in 1574, and the original and important Rathhaus of Emden in the same year. The last has a gallery in front of the uppermost storey and a clock and bell-tower rising out of the roof.

The Lusthaus at Stuttgart, which Georg Beer and other masters built between 1575 and 1593, is one of the most original of buildings. The architect has set before himself the same task as at the Belvedere at Prague. There is a ground-floor surrounded by a portico, above which an open terrace surrounds the great hall on the first floor. Four low round towers with pointed, tent-like roofs, upon the four angles of the portico, may be cited as a reminiscence of the old military construction, and may add to the originality, but not to the classical nobility, of the *ensemble*. Elegant cabinets and pavilions were in this age formed of the towers once intended for defensive purposes. Above all, it is the high German roof, with its richly-ornamented gables at the ends, that stamps the structure as specially German, and when compared with the Belvedere at Prague shows how far the German taste was from desiring to produce a structure which should be a fully-rounded classical work of art. At Prague we meet classical nobility; at Stuttgart picturesque and characteristic originality without noble proportions of the whole. Yet the detail of the structure, especially of the porticoes around it, must be esteemed pure and noble. Unfortunately, in the middle of the present century the unwarrantable barbarity of destroying the original structure was perpetrated.

The Marburg at Munich and the Geltenzunft House at Basel date from 1578, and both have regular palatial façades. The magnificent Church of St. Michael at Munich was built between 1582 and 1597; its immense tunnel-vaulted nave with a row of chapels on each side produces an impression of grandeur scarcely attained by any mediæval church, yet, notwithstanding the magnificence and the skilful effects of the lighting, does not present that special church-like appearance which characterizes the Gothic structures. The lofty gate of Dantzic and the small Castle of Gottesau, near Carlsruhe, with its five towers, belong to the year 1588. The charming Topler House at Nuremberg, in which the fantasy of the mediæval ages again appears, except in some tracery which assumes wildly classical forms, belongs to the year 1590. The Gewandhaus at Brunswick (1590) returns entirely to the design of the mediæval gable-house with many low storeys thickly covered with Renaissance ornamentation (*pl.* 46, *fig.* 3).

The Knight's House at Heidelberg (*fig.* 1) also shows in the fantastic contours of the gables and in many details vagaries going even beyond the privileges of fancy, as is also the case with the gables and windows of the university at Helmstädt, constructed 1593-1612. The

New Church at Würzburg (1591) has departed from mediæval church-traditions in every important respect, yet has preserved many traces of them. After the pattern of the Rialto at Venice is the Fleischbrücke at Nuremberg, with its one mighty arch, erected between 1596 and 1598 by the architects Unger and Stromer, and exhibiting a work of public utility essentially remodelled with the special aim of producing a work of art. The church at Freudenstadt (1599) is original in the highest degree, but proves in its beautiful Gothic netted vaulting and a number of other parts that at that time Gothic was not by any means extinct.

Works of the Seventeenth Century.—Among the works which carry this older style into the seventeenth century, albeit with many *baroque* details, some following more the palace style, others, again, perpetuating the old German gabled house, we may mention the Neue Bau at Stuttgart (1600–1609), which is four storeys high and at the angles and in the centre of the sides has towers a storey higher, adorned with many balconies. In the eighteenth century this edifice was unfortunately burned, and was afterward demolished. The royal palace at Munich, erected between 1600 and 1616, follows even more the Italian style of Bernini's time, especially in the marble decorations, while the architecture of the façade, entirely painted on smooth ornamented surfaces, and the pilasters running through several storeys, recall Palladian *motifs* without obtaining their severity.

The Friedrichsbau at the Castle of Heidelberg, with its two lofty gables—which our view of the court (*pl.* 46, *fig.* 2) shows exactly opposite, adjoining the porticoed structure of Frederick I.—continues, indeed, the system of the Otto Heinrichsbau, but is more massive and allows the details, especially the entablatures, which are broken around the pilasters, so to stand out that they entirely dominate the impression of the *ensemble*. Yet many details are very clever, as the manner in which the vertical membering of the pilasters and that of the figure-niches blend with each other, and in the piers between the windows, which, after a projection under the capitals corresponding to the heads of the Hermes figures, widen out into breasts and shoulders, and thence, mummy-like, narrow downward to the feet, which are again allowed to project uncovered. The pilasters—those which have Hermes figures, as well as the others—are overlaid with rich ornament. The massive projecting cornice, as well as the exuberance of the ornamentation, gives to the entire structure an extremely picturesque effect. This structure of the year 1601 shows no longer Italian gayety, but German gravity. The aspect of the Spiesshof at Basel is more Italian, and it was probably finished a little earlier, since its interior finish bears the dates 1601 and 1607.

Arsenal at Dantzic.—A varied fantasy similar to that which is apparent in the Friedrichsbau of the Heidelberg Castle is also displayed by the much more simple forms at the arsenal at Dantzic (1605), in which, as in many buildings of the Netherlands, a more vivid effect is produced by the use of light-colored stones whose clear tint shows boldly out from the

dark red-brick walls in which they are inserted according to a definite system.

The Pellerhaus at Nuremberg (1605) is equally fanciful in its gable and is almost overwhelmed with mouldings and ornament, but the details are smaller, corresponding to the smaller dimensions; so that the effect of the *ensemble* is not destroyed by the burden of the ornament. The court (*pl.* 47, *fig.* 1), with its porticoes, balconies, and terraces, has all the romance of the Middle Ages notwithstanding its *baroque* details; Gothic motives are still present in the fan-groining, in the execution of the spiral staircases, in the open-work of the parapets, and, indeed, in so many ways that the late date is but another, and yet not the final, proof of how deeply the Gothic style had permeated the German spirit.

The Church of St. Mary at Wolfenbüttel, begun in 1608 and finished in 1660, is another proof of this. It has narrow pointed windows filled with remarkable reproductions of Gothic tracery, lighting three aisles of equal height separated by octangular pillars and ceiled with Gothic vaulting, though every portion of the moulding exhibits the wildest forms of the latest Renaissance.

The Town-hall at Bremen (*pl.* 46, *fig.* 5) was restored in 1612. The older Gothic part was preserved, and the newer portion shows *baroque* elements.

The Castle of Aschaffenburg, erected by Georg Ridinger of Strasburg in the beginning of the seventeenth century and finished in 1613, exhibits the palace style in tolerably simple but solid forms, and is dominated by massive towers in which the old castellated character is still displayed.

The House of Liebnitz, at Hanover, belongs also to the seventeenth century, and shows how this picturesque Gothic style, which corresponds so well to German taste, long held its own in isolated works. Indeed, the German gabled house, with low storeys and its fantastic decoration of curved gable lines, remained predominant throughout the seventeenth century in most German cities, not only after a new direction had been given to art, but also after all the details had been completely changed. In many cities it continued in use throughout the entire eighteenth century.

5. ENGLISH AND SCANDINAVIAN RENAISSANCE.

The popular taste of Scandinavia and England accepted the Renaissance even less promptly than Germany. There was, besides the national, a farther-reaching Protestant trait in the efforts made against the art-direction so zealously cherished by the Catholic Church. England scarcely accepted the Renaissance proper, though, like Germany, she could not entirely reject it. Individual Italian artists executed isolated works there; thus, Pietro Torrigiani constructed in the Chapel of Henry VII., in Westminster Abbey, in 1519, the Tomb of Henry VII. and of his spouse, Elizabeth, as also that of his mother, Margaret of Richmond. It is in Caius College, at Cambridge (1565-1574), that we first find a large build-

ing in the new style; it was the work of a German architect, Theodore Have of Cleves, and exhibits fantastic but picturesque English-Gothic elements mingled with the antique.

Longleat House was built between 1567 and 1579 by an Italian architect, Giovanni of Padua. This is a stately castle forming a great rectangle enclosing two courts separated by an intermediate building. It has three orders of pilasters with Gothic mullioned windows between them, and is varied by great bay-windows from top to bottom. The Italian must have accommodated himself to English customs and ideas.

Wollaton House, begun in 1580, has a high central structure with arched windows and four projecting angle-towers at the top. The central structure is flat-roofed, has a thoroughly mediæval character, and is surrounded by fantastically-shaped two-storey structures with three-storey angle-towers decorated with pilasters and entablatures and pierced by great rectangular windows with mullions and transoms. The architecture of these wings is *baroque* and wanting in repose, while the massive central structure rises solemnly above them.

The Castle Nykiöbing, on the island of Falster (Denmark), built in 1589, consists of four wings surrounding an irregular court; it is surmounted by a square principal tower and decorated with polygonal staircase-towers. The chapel is still essentially Gothic.

Burleigh House (1577), with its numerous towers; Longford Castle (1591), triangular in plan, with great round towers at the angles and pointed arches borne on Doric pilasters; Hardwicke Hall (1597); Temple Newsam (1612); Audley End (1616), and others, may be mentioned as being almost Gothic castles. Holland House, erected in 1607, claims particular notice on account of the noble proportions of its round-arched arcades, numerous simply-curved gables, and Gothic windows.

Castle Rosenborg, at Copenhagen, built in 1604, consists of a single wing with two salient towers at the ends and an octangular staircase in the centre, behind which, on the rear façade of the building, rises a massive tower. The whole is decorated with oriels and gables which appertain to that fantastic manner which was developed during the sixteenth century in the North, but the details are somewhat *baroque*.

The Castle Frederiksborg, near Copenhagen, in the midst of a beautiful country, exhibits the degenerated German Renaissance with oriels, high-curved gables, and slender towers. The fantastic impression is heightened by the variously-colored materials. The portal bears the date 1609.

At Neville's Court, in Trinity College, Cambridge (1615), there are colonnades on the ground-floor, but the windows are mullioned. The entrance of Oxford University¹ (1612) unites an order of columns with pinnacled architecture. To the same period belongs Blickling Hall, with four angle-towers, a large square tower with an octangular upper

¹ Our author must allude to the School's Tower, which is Late Gothic in general design, but is ornamented with clustered columns of the five orders of Roman architecture and a sculptured figure of James I. The architect was Thomas Holt.—ED.

portion in the centre of the façade, and many bays with Gothic windows; the entrance, with its rich Renaissance detail, bears the date 1620. St. John's College at Oxford (1631), the chapel of St. Peter's College at Cambridge, and Clare College at the latter place, with its picturesque court, are still replete with mediæval forms exhibiting a mixed style with the Renaissance.

The Exchange at Copenhagen (1624-1640) is a stately structure displaying its length between two canals. It has a high roof ending in a tall gable on the ends facing the canals; under these gables stately flights of steps lead up to marble portals. The side has a great gable with a central tower, the summit of which is composed of four dragons with intertwined tails. Numerous dormers with fantastic gables diversify the roof, and the walls are rich with Hermes figures and other adornments. The hall is embellished with paintings from the history of Denmark.

The Castle of Kronburg, near Helsingör (1629), is a square edifice surrounding a rectangular court, and is decorated with towers and high gables like Frederiksborg.

The Heriot Hospital, at Edinburgh, erected 1628-1660, has four tower-like pavilions at the angles; it has scarcely any Gothic in its details, but exhibits the classical forms, which are adopted in the most *baroque* and misapplied manner, built up into a whole which is without grandeur, but so much the more picturesque.

Late Renaissance: Baroque Style.—Thus the entire North accepted the Italian Renaissance, but only to a certain extent as a predominant factor in the details and in some peculiarities of the plan. Its introduction was in the face of great opposition. In the second half of the sixteenth century France followed Italy for the most part—at least, in the adoption of the palatial, symmetrical, regularly-planned edifice, which in Germany was carried out only occasionally, chiefly in great palaces for the construction of which masters were imported from Italy when secular or clerical princes, by adopting Italian art, and following their Catholic tendencies, desired to knit themselves more closely to the land which was at once the centre of the Church and of culture. Even in the beginning of the seventeenth century Italy was still the centre of culture, and still more the centre of all art-aspirations. Thither every master, in whatever land he might work, must repair to gain inspiration in his art; there he must seek his *motifs*.

We have before stated (p. 237) that in Italy the main impression of the edifices was produced by the massive strength of the details, and that characterization was scarcely thought of, pomp being chiefly relied upon to produce a grand effect; this character of pompous ostentation came more and more into the foreground. Since the internal tectonic needs had for so long a period had no share in the formation of the members of a building and had so long worn a foreign garment, men no longer saw any reason why they should continue to reverence the ancient historic form of the details; if they could invent something that was to some extent a

novelty, they could not understand why they should for ever continue to use the same well-known pilasters and entablatures.

Yet the palaces of Filippo Durazzi and Balbi, the Palazzo Reale, and that of Tursi Doria (now del Municipio) at Genoa—the latter, commenced in 1590, being the work of Rocco Lurago—are somewhat severe in appearance. The façade of the Doria palace has two series of pilasters, each corresponding to a principal and a *mezzanine* storey. The windows have framelike architraves partly of very flowing forms. Among the more rigorous works is the Palazzo Borghese, the court of which (*pl.* 41, *fig.* 5) is surrounded by massive colonnades.

At the end of the sixteenth century, and until 1604, Giacomo della Porta, a pupil of Michelangelo and Vignola, was active at Rome. After the death of Michelangelo he finished the dome of St. Peter's according to the master's designs and completed the Capitol. He also built the Corte della Sapienza and the palazzi Niccolini, Godofredi, Marescoti, and Marchetti, as well as the Villa Aldobrandini near Frascati. At the same period Domenico Fontana built the Lateran Palace and the Piazza del Monte Cayallo, and also began the royal palace at Naples, with its great three-storey façade. Carlo Maderno built the Barberini and Mattei palaces, and after 1605 added the nave to St. Peter's. Flaminio Pouzio built the Palazzo Sciarra and the Quirinal. The Villa Borghese, erected by Fiammingo, is in plan like the Villa Medici.

Classic Revival.—That dominance over the minds of the Northern nations which the Church, as such, had failed to attain was at last acquired by a spirit which, though emanating from within the Church, did not arise from its teachings: this spirit was that which had become saturated with classical ideas—that humanism of the Renaissance with its science and its art, which attained domination only after shedding its gay and specifically Italian elegance, only after Palladio and his successors by the hollow and imposing pomp which they introduced rendered possible a new style. This new style was no longer Italian, but became universal, just as the general culture had become universal and was no longer Italian. Italy had indeed remained the centre of this culture until toward the end of the seventeenth century, and then only abdicated a portion of its dominance to France, which had regained under Louis XIV. that European preponderance which it had enjoyed during the twelfth and thirteenth centuries. But France, like Italy, was only a central point: the whole of Western Europe was the realm out of whose broad area all forces worked toward the same end—the diminution of national differences and the advancement of sentiments and interests which swayed all countries alike.

France was the first country which at the commencement of the seventeenth century directly adopted the symmetrical palatial architecture that proceeded from Italy, and the latest French works of the sixteenth century noticeably tended toward this end. In 1611, Jacques de Brosse built the Luxembourg Palace at Paris for Maria de' Medici; this struc-

the same imitation of the manner exhibited by Ammanati in the Palazzo Pitti.

In the Protestant parts of Germany adopted this style less decidedly. The town-hall at Nuremberg (1613-1619), the work of Eucharicus Holzschner, was one of the first German works of the kind; he adopted the same arrangement with much directness and reached an imposing effect without the superfluous detail. Yet he did not venture to introduce the classical Palladian columns and pilasters, while in three pavilions which project from the cornice to break the horizontal sky-line may be recognised the influence of the naïve German picturesqueness.

One of the most important edifices of the Netherlands is the old town-hall (now the royal palace) at Amsterdam, built by Jacob van Campen in the first half of the seventeenth century. The sober style of the Palladian influence spread everywhere is here apparent without being weighed down by too massive detail; the grand proportions give to the structure an effect of solidity. The Church of the Jesuits at Cologne (1621-1629), on the contrary, almost permits Gothic to predominate. It reaches an effect of magnificent spaciousness, but is at the same time so permeated by *baroque* elements that we can scarcely enumerate it with the before-mentioned works in which the Middle Ages are still prominent.

Waldstein Palace.—Among the palaces of Prague, the Waldstein (1621) built by the grand duke of Friedland, stands out conspicuously. The square court and external façade show with sufficient stiffness the Italian style of the period with some *baroque* additions. A colossal *portico* of three mighty arches of the entire height of the palace opens backward toward the garden, and in its exceeding grandeur and magnificence surpasses not only the German, but also the Italian, structures of the Renaissance, and in architectonic importance exceeds the palace itself; but exact researches must be instituted before it can be known whether Italian masters worked upon the palace or the portico.

Inigo Jones.—In England, where the picturesque mixture of Gothic and Renaissance generally known as Elizabethan lasted far into the seventeenth century, the decided acceptance of Renaissance forms and of the world-ruling Italian taste first took place in the reign of Charles I. (1625-1649), when architecture in Italy itself was on the way to the great degradation. It was Inigo Jones who sought to make the Italian style familiar, and, following Palladio, designed the palace at Whitehall, which had it been executed in its entirety would have been the largest palace in the world built in the Italian style. But only a small part was finished; the king was executed in it, and subsequently the construction was abandoned. In his villa at Chiswick, Inigo Jones adhered closely to Palladio's model, since he placed an octangular cupola over a square building and set up a Corinthian temple-front for the entrance. In Wilton House he attained nobility of effect through beautiful proportions, but it was coupled with remarkable sobriety. Webb, the adopted son of Inigo Jones, designed

Amesbury Castle, in Wiltshire, as a plain quadrangular mass with a ground-floor of rusticated work on which stood a lofty storey, and above that a half-storey, with a Corinthian portico and pediment for the entrance. He also superintended the construction of Greenwich Hospital.

François Mansard invented the roof which bears his name, and which made it possible for him to work into a storey contained in the roof the rich dormers that for a long time had been used in France, and to approximate the Italian manner. This mansard storey rose over a horizontal cornice, and above it the roof was almost flat. The rest of his architecture closely followed Palladio without entirely accepting the exaggerations of his model. One of his principal works is the Château Maisson, near St. Germain.

Though the entire spirit of the Renaissance was secular, though it degenerated more and more, though its anti-Christian spirit penetrated gradually into all lands, yet this could not happen without an inward reaction, without the setting in of a current equally international working in the interests of Christianity: this current found its chief supporters in the order of the Jesuits and in that portion of the clergy which followed it. It falls outside our province to trace the action of this tendency, and to follow the long-continued strife which the free worldly tendency carried on uninterruptedly with this reactionary one. We have but to note the fact that church-building was everywhere carried on with renewed activity, and that the churches, whether in the North or in the South, struck the same key, more independent of local schools and of nationality than at any other period, yet that church-construction also participated in the *baroque* condition of Architecture—that it also sought by hollow pomp to win the masses and by the exaggeration of this hollow pomp to the uttermost to dazzle and lead the senses captive. It is impossible to give the date at which this influence began to be powerful. This spirit speaks in many of the before-mentioned Italian works, and in the course of the seventeenth century it forced its way out of Italy into the North, and there overpowered the yet-existing tendency which still upheld reminiscences at least of Gothic. Naturally, this new tendency was nowhere so strong as in Italy, where great numbers of buildings rose. Of extraordinary magnificence is the Church of S. Domenico at Palermo, begun in 1640; this is an elongated basilica whose nave is borne upon eight couples of marble columns.

Guarini of Modena, built in Turin the churches of S. Lorenzo, S. Filippo Neri, the Porta del Po, the palace of Prince Philibert of Savoy, and the façade of the Palazzo Carignano.

Bernini.—One of the most influential masters of the seventeenth century was Lorenzo Bernini; in 1629 he designed the façade of St. Peter's at Rome with two towers, only one of which was executed, and this was soon demolished. The tabernacle of the high altar at St. Peter's is also his work, as well as the grand colonnades enclosing the entrance-court of the same church; these were added a little before his death. Some

masters had before this employed in their decorations parts of pediments—that is to say, the lower portions only—as had been done in the East in the latest period of the antique. Bernini gave these portions a curved form; he also took from the columns their supporting power by twisting them. He formed the upper part of the high altar of St. Peter's with curved colonnettes propped against one another in the centre. In short, he gave the signal to introduce everywhere curved forms in place of straight lines. At once these curved forms conquered all the countries of the West. There was through Europe an intellectual unity such as had never existed before. There was no longer any nationality: common culture had everywhere brought about a common taste. Architecture formed but one great school, the centre of which was Italy—was Bernini himself.


Borromini.—Bernini's rival, Francesco Borromini, sought to surpass him in originality—that is to say, in the invention of wild forms. Ground-plans and elevations threw away straight lines and were composed of curves twisted outward and inward in a wild topsy-turvy.

The painter Domenichino, who built at Rome the Church of S. Ignazio, the entrance of the Palazzo Lancelotti, and the Villa Ludovisi, preserved somewhat better proportions. Alessandro Algardi built the façade of S. Ignazio and the Villa Pamfili. Pietro Berettini of Cortona built also at Rome a series of churches, the most imposing of which was Sta. Maria in Via Lata. Cosima Fansaga of Bergamo, Bernini's pupil, built at Naples the Chiesa Nuova del Gesù, that of the Madonna della Pietra Santa, and the Fontana Medina.

The circular structure, on account of the beautifully artistic effect of space which it rendered possible, had not been entirely discarded from church-architecture. One of the finest examples is the cupola of Sta. Maria della Salute at Venice (*pl.* 40, *fig.* 4), erected in 1631 by Longhena. This cupola dominates the church; so that the other parts only appear to be attached between its abutments.

The Church of the Sorbonne at Paris (*pl.* 48, *figs.* 2, 3), together with the palace belonging to it, is the work of Jacques Lemercier, and was finished in 1653. In 1680, Giuseppe Sardi built the Church of Sta. Maria Zobenigo at Venice.

Jules Hardouin Mansard, nephew of the before-mentioned master, was the most influential architect of Louis XIV.'s court. He built the Château Clagny for Madame de Montespan, also the Châteaux of Marly and Grand Trianon, the Hôtel de Ville of Lyons, and, above all, the magnificent Château of Versailles, in which Louis XIV. erected a monument at once to his power and to his individuality. The external architecture is somewhat sober, yet distinctive, but the interior decoration of the apartments is luxurious almost to excess. The principal work of this master, and the one in which he showed himself a born artist, is the Église des Invalides, with its immense dome (*fig.* 1), whose finely-curved lines exceed in elegance those of the lantern of St. Peter's at Rome. In



the crypt of the Église des Invalides is the sarcophagus to which the mortal remains of Napoleon I. were transferred in 1861.

The Louvre.—The building of the Louvre, as in earlier times that of the cathedrals, was not the work of a generation. From 1624, Lemercier had continued the construction of the court and practically retained the style of the older parts; Leveau about 1660 worked upon the structure, also preserving the style of the older parts, and designed a corresponding eastern façade. The intrigues of the court of Louis XIV. extended even to this department, and Leveau was not permitted to erect this façade, for the king had summoned the sovereign of Italian architecture, the then old Bernini, from Rome to Paris, where he overwhelmed him with princely honors, without, however, delivering the construction into his hands.

The eastern principal façade of the Louvre was begun in 1664 by Claude Perrault after he had contrived to put aside all other plans—even that of Bernini. It is so sober, yet withal so magnificent with its grand colonnades, which rise high above the ground-floor, that it in fact approaches the works of ancient Rome more nearly than do the works of Bernini and all his Roman contemporaries.

Christopher Wren: St. Paul's, London.—What St. Peter's was for Rome, the new Church of St. Paul's was to be for London, which perpetually rose in importance as a metropolis of the first rank. Christopher Wren began the edifice in 1675 and completed it in 1710. The chief feature, as at St. Peter's, was an immense dome, to which a nave and an elongated choir, both with three aisles, as well as a short three-aisled transept, were added. The west front consists of a double range of colonnades between two towers. Though the structure is somewhat sober (*pl.* 48, *fig.* 6), the beautiful lines of the dome, which rises aloft like a tower from the centre of the group, impart to it a truly artistic importance.

Carlo Fontana built the Palazzo del Monte Citorio, the Grimani and Bolognetti palaces, and the Fountain of Sta. Maria in Trastevere, the Library della Minerva, the churches of S. Michele a Ripa Grande, Sta. Martina, and S. Marcello in the Corso at Rome, the Visconti Villa at Frascati, and the cathedral at Montefiascone.

The tendency to a greater liberty of caprice inaugurated by Bernini and Borromini was felt most in church-architecture, where, in union with the yet greater degeneracy of interior decoration, it gave room for the play of the most inconceivable caprices so far as the Catholic cult was concerned. Even Germany, after the war of the first half of the seventeenth century had destroyed so many churches, found opportunity to re-erect a series of such edifices in city and country—or, at least, to put others, partially ruined, into serviceable condition—and without distinction of creed the same degenerate forms were employed for the exterior. A very noticeable trait of greater sobriety distinguished the Protestant from the Catholic churches, but in the interior the use of galleries, which were essential to Protestant requirements, as well as the more sober spirit which

grew out of a simpler ceremonial and liturgy, often resulted in extreme and inartistic plainness, which was carried still farther by the puritanical Northern spirit that excluded all externals from divine service. This severer and more earnest manner was apparent also in secular buildings, just as the same trait was evident in Palladio's works.

There is in this soberness a manifestation of the pride and exclusiveness affected by self-conscious rulers that they might give the rein more freely to luxury and fancifulness in the interior decoration, which was hidden from the eyes of their subjects. Thus we see by the side of the prevalent proclivity to exaggeration of every kind a more sober tendency present even in the Versailles of Louis XIV., and principally followed by French architects in opposition to the extravagant Italians. During the entire eighteenth century this latter influence gained upon the first. One of the noblest examples of these severely symmetrical palace-façades exhibiting the sober tendency of the North is the arsenal at Berlin, begun by Nehring in 1685. Here also we have to notice the curved lines of the upper part, already employed at Versailles.

The Italians had placed upon the upper quarter of the cornice, which is finished with a parapet, a number of statues, obelisks, and flower-vases, corresponding to pilasters and columns arranged over one another, and so exhibiting a certain verticality; as, for example, in the Library of St. Mark's (*pl.* 42, *fig.* 4) and in the arcades of the Palazzo Borghese (*pl.* 41, *fig.* 5). This kind of decoration was gradually developed into groups of figures, generally allegorical, and then into trophies of arms, which naturally would be more in place in an arsenal than at the Palace of Versailles. Allegorical figures constituted an essential integral part of the architectonic forms, and soon groups of banners, cannon, shields, and cuirasses became cherished adornments which were placed over entrances and wherever they could be introduced. In some cases in secular structures these decorations overpowered the proper architectural members, just as the clouds and the trumpet-blowing angels dominated the interior architecture of the churches.

Thus, Giuseppe Miglioranza built in 1687 for the Bombardiere of Verona, at the Scaliger Palace, an entrance which has no architectural forms, but seems composed entirely of cannon and other implements of warfare arranged in such a manner that bare cannon placed on drums balance at their ends perfectly-mounted guns which support a balcony the parapet of which is again formed of cannon.

Fischer of Erlach.—The principal master in Austria at the turn of the seventeenth and eighteenth centuries was Johann Bernhard Fischer of Erlach, who excelled in magnificence of proportions and beauty of arrangement, but in details was attached to the exaggerated forms of Bernini and Borromini. He constructed the imperial library and the winter riding-school of the Hofburg (imperial palace) of Vienna, designed the proposed reconstruction of the palace (*N.* 47, *fig.* 5)—which was only partially completed—built the Church of St. Peter, and also the castle at

Schönbrunn (1696-1700) and the domed Church of St. Charles in Wieden (*pl.* 47, *fig.* 8), both in the suburbs of Vienna.

Johann Lucas von Hildebrand, the rival of the last, built in 1693 the Castle Belvedere, a front and a rear view of which are given in Figures 6 and 7. The front (*fig.* 6) stands at the summit of a magnificently-terraced garden adorned with many figures, groups of statuary and fountains, hedges trimmed into shapes, etc. At the bottom of this stands a second small castle.

In connection with Joseph Emanuel, son of Fischer of Erlach, Hildebrand erected in Weyburg Street the Palace of Prince Eugene, the great staircase of which, with its figures of giants, has an effect at once characteristic and magnificent. Among the other Viennese palaces, that of Prince Liechtenstein on the Minoritenplatz, built in 1694, and that of Prince Kinsky in the Freiung, built in 1719, both the work of Hildebrand, the Bohemian Court of Chancery, built in 1716 by Fischer of Erlach, and the summer palace of the Princes Schwarzenberg, by the same master (1706-1725), are of surpassing splendor. Grand staircases and vestibules are present in all these, and huge massive membering imparts to them a distinctive severity which gains in impressiveness through the figures of giants which, some of them fashioned as termini, bear balconies, stairs, etc. Between 1699 and 1706, Andreas Schlüter built at Berlin the royal palace, of great dimensions and in a severe style which, though the building was not finished, was not spoiled by subsequent alterations. A harder and somewhat more severe style is evident in the works of the Englishman John Vanbrugh, whose principal work is Blenheim Palace, and his next Howard Castle.

Colin Campbell, another English master of this period, built Wanstead House, which has a Corinthian temple-façade. Other works of the eighteenth century in England are Kent's north front of the Treasury building at Whitehall, the Radcliffe Library at Oxford, and Somerset House at London, the work of Sir William Chambers.

Zwinger.—In 1711, King Augustus the Strong of Poland laid out at his princely residence at Dresden, on the site of the fortifications, the group of structures which now bears the name of Zwinger, and which consists chiefly of a lofty arcaded portico broken by pavilions and entrances, and with its salient and re-entering angles partly surrounding three sides of a rectangular court, the fourth side of which was to have been occupied by a castle, of which the entire Zwinger was to have formed the fore-court. The pavilions are built with surpassing fancifulness and the most varied forms, as is also the small tower above the chief entrance (*fig.* 4), while the arcades between are quiet and dignified.

One of the most magnificent princely palaces is the residence of the prince-bishop at Würzburg, with its splendid staircase, erected 1720-1744 by Baltz (Balthasar) Neumann. Castle Schleiss is quite as magnificent, but less noteworthy is Castle Nymphenburg, copied from Versailles.

Grandest in design of any of the German palaces, but very stiff in

execution, is the Castle of Mannheim, begun in 1720 by the Palsgrave Karl Philipp; of less size, but of finer architecture, is the castle at Rastadt; that at Carlsruhe is of original design, and the small castle at Bruchsal is charming. Of original design, with a round cupola in the centre and magnificent double flights of steps, is the "Solitude," near Stuttgart, the pleasure-house of the duke Karl of Württemberg.

The immense convent of Mafra, in Portugal, which exceeds the Escorial in circuit, was built 1717-1732. The church, with its two towers and a cupola, forms the centre of the façade.

The majestic Spanish Stairs at Rome were begun in 1721 by Specchi and De Santis. Fernando Galli of Bibbiena was chiefly a theatre-architect, and constructed the theatres of Parma, Vienna, Prague, and Milan. His brother, Francesco, built the imperial *mandge* at Mantua and theatres at Rome and Verona, and afterward was summoned to Vienna and Nancy.

Even this late period had its theorists who promulgated its forms as a school. Master Nikolaus Goldmann of Breslau, who lived at Leyden, in Holland, advocated a simpler direction. His chief work, a complete *Hand-book of Civil Architecture*, first published in 1708, with notes by Bernhard Christoph Sturm, does credit to both the editor and the older author, although it shows a spirit of Dutch soberness similar to that displayed in the Stadhuis at Amsterdam. The fantastic direction, as particularly developed by the Italians in church-architecture, is advocated by the Jesuit Father Andrea Pozzo, who as painter and architect erected many churches of his order and decorated them with stucco-ornamentation. Among the many architectonic improprieties found in his two volumes which appeared at Rome in 1693 may be mentioned sitting columns—that is, columns which are so bent that they seem to be sitting. His work *A. Putci perspectiva pictorum et architectorum* appeared in 1706 in a German edition.

The Castle Christiansborg, at Copenhagen, built 1732-1740, has a tower in the centre and shows the commonly-accepted style of the period in stately development. Filippo Juvara of Messina built the Superga at Turin. Sachetti, Juvara's pupil, commenced at Madrid in 1737 the royal palace, which his master had designed.

Alessandro Galilei of Florence built at Rome the Corsini Chapel, in the Lateran, the façade of the Lateran Basilica—which has a pediment like an antique temple, with a portico below and a loggia above, embraced between two great pilasters—and S. Giovanni dei Fiorentini.

Ferdinando Fuga erected at Rome the Palazzo della Consulta on Monte Cavallo, and the Palazzo Corsini; also, at Naples, the façade of Sta. Maria Maggiore, the great hospital, and several palaces.

The eighteenth century brought again a series of churches in Germany. Most of them have naves which open into an immense cupola, and have a façade with two towers. There is little of architectonic detail, but in the interior of most of them a confusing wealth of the wildest forms is developed. On the other hand, the general design is almost

without exception excellent in proportions, especially the façade, which is in most cases lofty and produces an imposing effect. We may here mention churches at Vienna; also the collegiate Church of Mölk, which, together with a palatial convent, rises high upon a cliff above the river, dominating the entire Danubian region. We may also mention the churches of Waldsassen, near Eger, Maria-Kulm, Vierzehnheiligen, Banz, Ottobeuren, Einsiedeln, St. Gallen, St. Blasien, and Weingarten.

Among the cupola churches of this period the Church of Our Lady at Dresden, which George Bähr built (1726-1738), takes the foremost place (*pl.* 47, *fig.* 3), since the cupola, of comparatively small diameter, appears to exist more for the exterior than for the interior. If it had a tambour, the entire building would become a well-proportioned tower.

The Catholic church at Dresden (*fig.* 2), begun in 1736 by Gaetano Chiaveri, is an Italian structure of the late period, pompous and pretentious, but pleasing from its noble proportions. The open-work tower rises aloft with decorative playfulness.

One of the most beautiful church-façades of the eighteenth century is that of St. Sulpice at Paris. It consists of an Ionic colonnade superimposed upon a Doric one, with towers of Corinthian colonnades at the ends. It is a work of the Italian Giovanni Niccolò Servandoni. It was commenced in 1730, but was altered by Chalgrin in 1777.

Luigi Vanvitelli built the magnificent Castle Caserta (begun in 1752), near Naples, part of the façade of the royal palace and the Annunziata in Naples itself, and at Ancona the hospital, a massive pentagonal structure, and a triumphal arch which stands on one of the two moles that protect the harbor.

City of Nancy.—A uniquely-artistic city-plan is that of Nancy, where Leopold I. and Stanislaus Leszczyński, the last duke of Lorraine, built near the older city a new one having straight streets laid out at right angles and closed at their ends with triumphal arches which can all be seen at once from the Stanislaus Square in the centre. The hôtel de ville, the episcopal palace, and the theatre stand around this square, which is filled with fountains, statues, and groups of trees, and is bounded on all sides by gilded palisades. A triumphal arch leads from the principal square to the Place Carrière, and an avenue thence to the grand-ducal palace; the cathedral is also in this new part of the city, the houses of which are all built after one system, though the monotony is happily diminished by varied grouping.

Rococo.—After the first decades of the eighteenth century architecture lost its *baroque* strength and energy, and the sober tendency overpowered every architectural idea. In the domain of decoration alone there remained a fantastic though feebly-delicate set of ornamental forms, which, since it belonged to the surfaces, rose so slightly above them that, in contrast to the force of the *baroque*, it never dominated the *ensemble*, and, notwithstanding its often endless richness, never conquered the general soberness.

It was only occasionally that this ornamentation appeared on the exterior of the structure; it predominated in the interiors of the rooms, where, since it was felt to be purely decorative, it set aside every law. Twining plant-forms spread over walls and ceilings, avoiding the law of symmetry as their worst enemy, setting at naught the laws of stability, effacing all angles and corners, yet with a peculiar insinuating delicacy which broke through the limitations of the every-day world and introduced in its place an artistic one which had but some slight traces of it, such as figures of pretty smiling children, a laurel-wreath, or a garland, to bind the artificial world to the real one. The entire circle of forms may be called one great deception; and it is right to use the word in its most specific sense, since evidently the entire foundation of the human intelligence is ignored in order that for a few short hours a plunge may be taken into an unreal world—or, rather, that by such a pleasant steeping in unreality life may be made endurable. Yet the amiable refinement and delicacy of this idyllic medley can scarcely be condemned in decorative forms, for the forms which give expression to this hollow *éclat* cannot be called architectural, and hence an excuse is found for the deception. It does not attempt to pass for truth, but rather formally denies the right of the latter to exist, since it does not possess that pallid inspiration which artificiality alone can give. Thus it came about that all external adornment except what lay in tectonic necessities was denied to Architecture, and, save where custom compelled the preservation of some remains of the ancient architectural detail, all that did not serve as a basis for the dreamy decoration was as formless as a stage scene viewed from behind.

If, therefore, that degenerate Renaissance for which the foundation was laid by some caprices of Michelangelo, and which led to the *fantasticities* of Borromini and Pozzo and of the Zwinger Pavilion at Dresden, may be called the *baroque* style, that which originated in the court of Louis XV. may be designated "rococo,"¹ and should be considered a decorative, but not an architectural, style. It is only a sobering down of the *baroque*, affecting the exterior, though the interior is still as *baroque* as ever—a sobering down which without definite limits carries over the *baroque* into the stiff "quene style" which is the last flashing up of the Renaissance.

Quene Style.—That sobriety which had become general toward the middle of the century made itself evident in the decoration about the end of the third quarter. The unsymmetrical *rococo* began to disappear, and left behind it only the borders which it had before employed as a limit for its twining foliage, forming resting-places for the view upon the wall-surfaces. These borders, or architraves, were even now sometimes twisted

¹ In English literature it is equivalent to what in the English language is usually known as the style of Louis XIV. and Louis XV. or the "style." It is distinguished from the "style" of Louis XV. in which it is the ornament that reveals in strange forms, while the architectural features are simple.—F.R.

into a wreath bearing a medallion with a knot. But in proportion as the taste for the poetic deception referred to above reverted to reality, architectonic forms and architectonic membering were again designed. The increasing sobriety would not permit a return to the extravagances of the time of Louis XIV., so an approach was again made to the antique, the forms of which, first copied from memory and afterward from actual studies, were mingled with the remaining traces of the *baroque* style and of the *rococo* ornamentation.

No precise date can be given for the commencement and the close of all these changes. One element came in after another, one after another disappeared, and we must therefore introduce our reflections in chronological order, but remark that examples of each manner may be found a little before or a little after the series of art-monuments represented. But we may try to find a historic date for some, though not for all, of the individual elements.

Italy had given up the leadership in the department of art: it had passed over to France. It was at the court of Louis XV. that the *rococo* taste found expression, as the *baroque* phase had been inaugurated in that of Louis XIV., and it was at the court of Louis XVI. that the spirit of soberness came in vogue. The three art-directions might be named from these three monarchs were not attention given to the fact that some of the peculiarities of art appeared elsewhere much earlier or much later. Thus, the new palace at Stuttgart, begun in 1746, displays scarcely any traces of the *baroque* (Louis Quatorze), and is yet devoid of the sobriety of the Louis XVI. manner, while it has architectonic details and decorations which show sufficiently the widespread influence of a return to the antique, though at this date the much more widespread *baroque* reminiscences are found in other places, and the *rococo*—the negation of every architectonic idea—was still in full sway.

Dwelling-houses.—The art of the eighteenth century had its seat in the courts of the princes; it had its branches in the dwellings of the burghers, but there it had not always that delicacy which pleased as in the courtly stem. We have stated before that the essentially Gothic city-residence with its gable and oriel ornamented with *baroque* decorations endured throughout the entire seventeenth century; the sober tendency of the eighteenth century did away with the greater part of these *baroque* forms, and greater simplicity—that is, a still more thoroughgoing homely plainness—took its place. Nevertheless, a few unsymmetrical *rococo* volutes curled over the surface above the window-architraves, and proved that the old tendency remained intact. The honorable burgher in the seventeenth century retained his cherished home, his modes of thought, and his occupations, yet dressed them in modern forms which he had derived from church and palace, as if to show that he was abreast of his time; perhaps even with the secret thought that he would do as the great lords did—that he would accept the deception of the time as his education, just as he had brought many of the manners of the court into his house.

As the necessity for an architectonic set of forms came in; as men began to compare the *rococo* with really purer forms and learnedly discussed the necessity of replacing degeneracy with something better; as the educated architect, in the conviction that now all must be done otherwise than it had been, constructed his works theoretically, but never very practically,—it came about that through the foreign set of forms which he used the plain burgher's residence fell into disgrace, and the burgher at last believed that an educated architect must understand his wants, his occupation, and his modes of life better than he himself understood them. Then he despoiled his dwelling of all its essential parts and built it of the unessential: he made his home in a palace shrunk to a minimum, and even contented himself with a fragment of such a shrunken palace; and, since the house would not accommodate his trade and his modes of life, he adapted his trade and his modes of life to his house.

It was indeed in good part a result of the great deception of the eighteenth century that the aristocracy, when looking out of the windows of their palaces, desired to see as far as was practicable on the outside a continuation of that unreal world with which the *rococo* supplied them within. They wished to gaze, not upon irregular streets with houses as diverse as were the occupants themselves, but upon symmetrically-arranged dwellings in which nothing but uniformly ideal shepherds might be imagined, while in the quiet streets no inharmonious crowd should offend their ears. Still, now and then some burgher was cruel enough to destroy this ideal by a dung-heap in front of his doors or by something absolutely essential to his trade, thus showing how rude and unideal this real world is.

Theatres.—It was natural that the theatre should have a surpassing importance for such a world, and thus in all the princely courts arose theatres which were not entirely meant for the small circle of the court, but, that they might be filled, were open to the well-dressed burghers, who were expected, or even enjoined, to attend in the evening to add to the splendor of the show and to make more attractive the spectacle which met the gaze of His Serene Highness when he entered his box. These theatres, with their luxuriously-ornamented auditoriums, afforded a rich field for the exercise of the *rococo*. Most of them were afterward burned, and those remaining were adapted in their interiors to the ideas and tastes of other times; still, that of Baireuth and the Royal Theatre of Munich, together with a few others, show in what manner the architects, and still more the decorators, executed their tasks. Not only must the auditorium be decorated, but the stage itself must be in harmony with it, and must have its ideal landscapes, shepherds, etc.

Some theatre-architects who made the structure most sober decorated the auditorium pompously, designed the decorations of the stage, and partly painted it themselves. We have already mentioned the Bibbienas. Giuseppe, son of Francesco Bibbiena, worked in Vienna, Dresden, and Berlin upon the theatres and for the court ceremonials, and his son Carlo was employed as a theatre-decorator at Baireuth, Brunswick, Munich, and

Berlin, as well as in England, Sweden, Denmark, France, Spain, and Russia.

Under Frederick the Great building was actively prosecuted in Berlin and Potsdam. W. von Knobelsdorff built the opera-house at Berlin in 1741, the castle and the one-storey Sans-Souci, at Potsdam, and Büding executed the new palace. Karl von Götterd built the marble palace at Potsdam, as well as the two churches on the Gensdarmenmarkt at Berlin. The cupolas of these churches are converted by a high tambour of small diameter into a veritable tower with Corinthian temple-fronts below on three sides of it, while to the fourth, which is absolutely plain, a small church is attached, so as to make it clearly evident that the places of worship were but a pretext for the erection of two domical towers for the adornment of the square.

On the other hand, St. Hedwig's Church at Berlin is weighted down with a simple round dome of great diameter, for, though a correspondingly large space can at a reasonable cost be enclosed in this way, the unadorned structure in its soberness contributes little to the adornment of the city, notwithstanding its Corinthian temple-portico.

The University of Berlin, three storeys high, with a central structure and two projecting wings embracing a fore-court closed by a palisade, is magnificently simple in its lines, but remarkably plain. It was built (1754-1764) for Prince Heinrich, brother of Frederick the Great.

The return to classicism progressed rather quickly, but not abruptly. We have already said that the castle at Stuttgart inclines in this direction, and we have now to state that the University of Berlin exhibits the same tendency, while St. Sulpice at Paris is another instance.

This direction is still more definitely taken by the magnificent domed Church of Ste. Geneviève at Paris, erected by Soufflot; it was commenced in 1756 and finished in 1790. This, like many other churches built since St. Peter's at Rome, especially those at Berlin just described, follows a new system by which a high tambour dominates both arms of the cross and the dome and gives the entire domed structure the appearance of a tower (*pl.* 48, *figs.* 4, 5).

In 1763-1772 the Place de la Concorde—then called Place de Louis XV.—was laid out. On the north side of this two uniform palaces were erected for no other purpose than the decoration of the Place. These show a notable return to classicism, and have colonnades two storeys high. The architect was Jacques Gabriel, a pupil of the younger Mansard.

The royal library at Berlin, built in 1780, shows in its fantastic forms the tendency to replace straight lines by curved ones wherever possible. It forms a mixture of the *baroque* and the *rococo* in which the entire fancifulness of both is reproduced, but, like another similar work of that period, it is out of place in that sober world in which the tendency toward classicism is everywhere apparent. Only a few years after the death of Frederick II. there was erected in Berlin a structure belonging to this manner

that gave the deathblow to the *rococo*, and to all other mannerisms that still remained. The Brandenburg Gate of Berlin (*pl.* 49, *fig.* 5), built (1789-1793) by J. G. Langhans in imitation of the Propylæa at Athens, exhibits on a large scale the return to pure and sober forms, and did not, therefore, fail to exercise a decisive influence.

6. MURAL DECORATION.

Romanesque.—In the Architecture of the Middle Ages the Romanesque style developed an elaborate system of coloring of architectural details and ornaments, such as columns, capitals, friezes, and mouldings, wherein the main colors utilized were red and blue, together with occasional gilding. The color-effect was heightened by the addition of paintings of sacred subjects on the extended wall-spaces afforded by the church-architecture of the Romanesque period.

Gothic.—In Gothic architecture the coloring of details was less practised, for the same reason that obtained in the case of Corinthian architecture—namely, the smallness and the variety of the sculptured detail. On the capitals of Gothic columns the sculptured foliage was frequently gilded, the ground being generally colored red, while the mouldings were usually decorated with gilded stars upon a blue ground or with paintings of figurative subjects. Wall-paintings also found a more restricted application, owing to the absence of the requisite wall-spaces. They were replaced by the brilliant-colored light-effects produced by window-paintings.

grew out of a simpler ceremonial and liturgy, often resulted in extreme and inartistic plainness, which was carried still farther by the puritanical Northern spirit that excluded all externals from divine service. This severer and more earnest manner was apparent also in secular buildings, just as the same trait was evident in Palladio's works.

There is in this soberness a manifestation of the pride and exclusiveness affected by self-conscious rulers that they might give the rein more freely to luxury and fancifulness in the interior decoration, which was hidden from the eyes of their subjects. Thus we see by the side of the prevalent proclivity to exaggeration of every kind a more sober tendency present even in the Versailles of Louis XIV., and principally followed by French architects in opposition to the extravagant Italians. During the entire eighteenth century this latter influence gained upon the first. One of the noblest examples of these severely symmetrical palace-façades exhibiting the sober tendency of the North is the arsenal at Berlin, begun by Nehring in 1685. Here also we have to notice the curved lines of the upper part, already employed at Versailles.

The Italians had placed upon the upper quarter of the cornice, which is finished with a parapet, a number of statues, obelisks, and flower-vases, corresponding to pilasters and columns arranged over one another, and so exhibiting a certain verticality; as, for example, in the Library of St. Mark's (*pl.* 42, *fig.* 4) and in the arcades of the Palazzo Borghese (*pl.* 41, *fig.* 5). This kind of decoration was gradually developed into groups of figures, generally allegorical, and then into trophies of arms, which naturally would be more in place in an arsenal than at the Palace of Versailles. Allegorical figures constituted an essential integral part of the architectonic forms, and soon groups of banners, cannon, shields, and cuirasses became cherished adornments which were placed over entrances and wherever they could be introduced. In some cases in secular structures these decorations overpowered the proper architectural members, just as the clouds and the trumpet-blowing angels dominated the interior architecture of the churches.

Thus, Giuseppe Miglioranzi built in 1687 for the Bombardiere of Verona, at the Scaliger Palace, an entrance which has no architectural forms, but seems composed entirely of cannon and other implements of warfare arranged in such a manner that bare cannon placed on drums balance at their ends perfectly-mounted guns which support a balcony the parapet of which is again formed of cannon.

Fischer of Erlach.—The principal master in Austria at the turn of the seventeenth and eighteenth centuries was Johann Bernhard Fischer of Erlach, who excelled in magnificence of proportions and beauty of arrangement, but in details was attached to the exaggerated forms of Bernini and Borromini. He constructed the imperial library and the winter riding-school of the Hofburg (imperial palace) of Vienna, designed the proposed reconstruction of the palace (*pl.* 47, *fig.* 5)—which was only partially completed—built the Church of St. Peter, and also the castle at

Schönbrunn (1696-1700) and the domed Church of St. Charles in Wieden (*pl.* 47, *fig.* 8), both in the suburbs of Vienna.

Johann Lucas von Hildebrand, the rival of the last, built in 1693 the Castle Belvedere, a front and a rear view of which are given in Figures 6 and 7. The front (*fig.* 6) stands at the summit of a magnificently-terraced garden adorned with many figures, groups of statuary and fountains, hedges trimmed into shapes, etc. At the bottom of this stands a second small castle.

In connection with Joseph Emanuel, son of Fischer of Erlach, Hildebrand erected in Weyburg Street the Palace of Prince Eugene, the great staircase of which, with its figures of giants, has an effect at once characteristic and magnificent. Among the other Viennese palaces, that of Prince Liechtenstein on the Minoritenplatz, built in 1694, and that of Prince Kinsky in the Freiung, built in 1719, both the work of Hildebrand, the Bohemian Court of Chancery, built in 1716 by Fischer of Erlach, and the summer palace of the Princes Schwarzenberg, by the same master (1706-1725), are of surpassing splendor. Grand staircases and vestibules are present in all these, and huge massive membering imparts to them a distinctive severity which gains in impressiveness through the figures of giants which, some of them fashioned as termini, bear balconies, stairs, etc. Between 1699 and 1706, Andreas Schlüter built at Berlin the royal palace, of great dimensions and in a severe style which, though the building was not finished, was not spoiled by subsequent alterations. A harder and somewhat more severe style is evident in the works of the Englishman John Vanbrugh, whose principal work is Blenheim Palace, and his next Howard Castle.

Colin Campbell, another English master of this period, built Wanstead House, which has a Corinthian temple-façade. Other works of the eighteenth century in England are Kent's north front of the Treasury building at Whitehall, the Radcliffe Library at Oxford, and Somerset House at London, the work of Sir William Chambers.

Zwinger.—In 1711, King Augustus the Strong of Poland laid out at his princely residence at Dresden, on the site of the fortifications, the group of structures which now bears the name of Zwinger, and which consists chiefly of a lofty arcaded portico broken by pavilions and entrances, and with its salient and re-entering angles partly surrounding three sides of a rectangular court, the fourth side of which was to have been occupied by a castle, of which the entire Zwinger was to have formed the fore-court. The pavilions are built with surpassing fancifulness and the most varied forms, as is also the small tower above the chief entrance (*fig.* 4), while the arcades between are quiet and dignified.

One of the most magnificent princely palaces is the residence of the prince-bishop at Würzburg, with its splendid staircase, erected 1720-1744 by Baltz (Balthasar) Neumann. Castle Schleiss is quite as magnificent, but less noteworthy is Castle Nymphenburg, copied from Versailles.

Grandest in design of any of the German palaces, but very stiff in

execution, is the Castle of Mannheim, begun in 1720 by the Palsgrave Karl Philipp; of less size, but of finer architecture, is the castle at Rastadt; that at Carlsruhe is of original design, and the small castle at Bruchsal is charming. Of original design, with a round cupola in the centre and magnificent double flights of steps, is the "Solitude," near Stuttgart, the pleasure-house of the duke Karl of Württemberg.

The immense convent of Mafra, in Portugal, which exceeds the Escorial in circuit, was built 1717-1732. The church, with its two towers and a cupola, forms the centre of the façade.

The majestic Spanish Stairs at Rome were begun in 1721 by Specchi and De Santis. Fernando Galli of Bibbiena was chiefly a theatre-architect, and constructed the theatres of Parma, Vienna, Prague, and Milan. His brother, Francesco, built the imperial *mandge* at Mantua and theatres at Rome and Verona, and afterward was summoned to Vienna and Nancy.

Even this late period had its theorists who promulgated its forms as a school. Master Nikolaus Goldmann of Breslau, who lived at Leyden, in Holland, advocated a simpler direction. His chief work, a complete *Hand-book of Civil Architecture*, first published in 1708, with notes by Bernhard Christoph Sturm, does credit to both the editor and the older author, although it shows a spirit of Dutch soberness similar to that displayed in the Stadhuis at Amsterdam. The fantastic direction, as particularly developed by the Italians in church-architecture, is advocated by the Jesuit Father Andrea Pozzo, who as painter and architect erected many churches of his order and decorated them with stucco-ornamentation. Among the many architectonic improprieties found in his two volumes which appeared at Rome in 1693 may be mentioned sitting columns—that is, columns which are so bent that they seem to be sitting. His work *A. Putci perspectiva pictorum et architectorum* appeared in 1706 in a German edition.

The Castle Christiansborg, at Copenhagen, built 1732-1740, has a tower in the centre and shows the commonly-accepted style of the period in stately development. Filippo Juvara of Messina built the Superga at Turin. Sachetti, Juvara's pupil, commenced at Madrid in 1737 the royal palace, which his master had designed.

Alessandro Galilei of Florence built at Rome the Corsini Chapel, in the Lateran, the façade of the Lateran Basilica—which has a pediment like an antique temple, with a portico below and a loggia above, embraced between two great pilasters—and S. Giovanni dei Fiorentini.

Ferdinando Fuga erected at Rome the Palazzo della Consulta on Monte Cavallo, and the Palazzo Corsini; also, at Naples, the façade of Sta. Maria Maggiore, the great hospital, and several palaces.

The eighteenth century brought again a series of churches in Germany. Most of them have naves which open into an immense cupola, and have a façade with two towers. There is little of architectonic detail, but in the interior of most of them a confusing wealth of the wildest forms is developed. On the other hand, the general design is almost

without exception excellent in proportions, especially the façade, which is in most cases lofty and produces an imposing effect. We may here mention churches at Vienna; also the collegiate Church of Mölk, which, together with a palatial convent, rises high upon a cliff above the river, dominating the entire Danubian region. We may also mention the churches of Waldsassen, near Eger, Maria-Kulm, Vierzehnheiligen, Banz, Ottobeuren, Einsiedeln, St. Gallen, St. Blasien, and Weingarten.

Among the cupola churches of this period the Church of Our Lady at Dresden, which George Bähr built (1726-1738), takes the foremost place (*pl.* 47, *fig.* 3), since the cupola, of comparatively small diameter, appears to exist more for the exterior than for the interior. If it had a tambour, the entire building would become a well-proportioned tower.

The Catholic church at Dresden (*fig.* 2), begun in 1736 by Gaetano Chiaveri, is an Italian structure of the late period, pompous and pretentious, but pleasing from its noble proportions. The open-work tower rises aloft with decorative playfulness.

One of the most beautiful church-façades of the eighteenth century is that of St. Sulpice at Paris. It consists of an Ionic colonnade superimposed upon a Doric one, with towers of Corinthian colonnades at the ends. It is a work of the Italian Giovanni Niccolò Servandoni. It was commenced in 1730, but was altered by Chalgrin in 1777.

Luigi Vanvitelli built the magnificent Castle Caserta (begun in 1752), near Naples, part of the façade of the royal palace and the Annunziata in Naples itself, and at Ancona the hospital, a massive pentagonal structure, and a triumphal arch which stands on one of the two moles that protect the harbor.

City of Nancy.—A uniquely-artistic city-plan is that of Nancy, where Leopold I. and Stanislaus Leszczyński, the last duke of Lorraine, built near the older city a new one having straight streets laid out at right angles and closed at their ends with triumphal arches which can all be seen at once from the Stanislaus Square in the centre. The hôtel de ville, the episcopal palace, and the theatre stand around this square, which is filled with fountains, statues, and groups of trees, and is bounded on all sides by gilded palisades. A triumphal arch leads from the principal square to the Place Carrière, and an avenue thence to the grand-ducal palace; the cathedral is also in this new part of the city, the houses of which are all built after one system, though the monotony is happily diminished by varied grouping.

Rococo.—After the first decades of the eighteenth century architecture lost its *baroque* strength and energy, and the sober tendency overpowered every architectural idea. In the domain of decoration alone there remained a fantastic though feebly-delicate set of ornamental forms, which, since it belonged to the surfaces, rose so slightly above them that, in contrast to the force of the *baroque*, it never dominated the *ensemble*, and, notwithstanding its often endless richness, never conquered the general soberness.

It was only occasionally that this ornamentation appeared on the exterior of the structure; it predominated in the interiors of the rooms, where, since it was felt to be purely decorative, it set aside every law. Twining plant-forms spread over walls and ceilings, avoiding the law of symmetry as their worst enemy, setting at naught the laws of stability, effacing all angles and corners, yet with a peculiar insinuating delicacy which broke through the limitations of the every-day world and introduced in its place an artistic one which had but some slight traces of it, such as figures of pretty smiling children, a laurel-wreath, or a garland, to bind the artificial world to the real one. The entire circle of forms may be called one great deception; and it is right to use the word in its most specific sense, since evidently the entire foundation of the human intelligence is ignored in order that for a few short hours a plunge may be taken into an unreal world—or, rather, that by such a pleasant steeping in unreality life may be made endurable. Yet the amiable refinement and delicacy of this idyllic medley can scarcely be condemned in decorative forms, for the forms which give expression to this hollow *éclat* cannot be called architectural, and hence an excuse is found for the deception. It does not attempt to pass for truth, but rather formally denies the right of the latter to exist, since it does not possess that pallid inspiration which artificiality alone can give. Thus it came about that all external adornment except what lay in tectonic necessities was denied to Architecture, and, save where custom compelled the preservation of some remains of the ancient architectural detail, all that did not serve as a basis for the dreamy decoration was as formless as a stage scene viewed from behind.

If, therefore, that degenerate Renaissance for which the foundation was laid by some caprices of Michelangelo, and which led to the fantasticalities of Borromini and Pozzo and of the Zwinger Pavilion at Dresden, may be called the *baroque* style, that which originated in the court of Louis XV. may be designated "*rococo*,"¹ and should be considered a decorative, but not an architectural, style. It is only a sobering down of the *baroque*, affecting the exterior, though the interior is still as *baroque* as ever—a sobering down which without definite limits carries over the *baroque* into the stiff "*quene* style" which is the last flashing up of the Renaissance.

Quene Style.—That sobriety which had become general toward the middle of the century made itself evident in the decoration about the end of the third quarter. The unsymmetrical *rococo* began to disappear, and left behind it only the borders which it had before employed as a limit for its twining foliage, forming resting-places for the view upon the wall-surfaces. These borders, or architraves, were even now sometimes twisted

¹ "*Barocco*" (*baroque*) is equivalent to what in the English language is usually known as the style of Louis XIV., or "*Louis Quatorze*" style. Its *interior* architectural features distinguish it from the "*rococo*" of Louis XV., in which it is the ornament that revels in strange forms, while the architectural features are simple.—ED.

into a wreath bearing a medallion with a knot. But in proportion as the taste for the poetic deception referred to above reverted to reality, architectonic forms and architectonic membering were again designed. The increasing sobriety would not permit a return to the extravagances of the time of Louis XIV., so an approach was again made to the antique, the forms of which, first copied from memory and afterward from actual studies, were mingled with the remaining traces of the *baroque* style and of the *rococo* ornamentation.

No precise date can be given for the commencement and the close of all these changes. One element came in after another, one after another disappeared, and we must therefore introduce our reflections in chronological order, but remark that examples of each manner may be found a little before or a little after the series of art-monuments represented. But we may try to find a historic date for some, though not for all, of the individual elements.

Italy had given up the leadership in the department of art: it had passed over to France. It was at the court of Louis XV. that the *rococo* taste found expression, as the *baroque* phase had been inaugurated in that of Louis XIV., and it was at the court of Louis XVI. that the spirit of soberness came in vogue. The three art-directions might be named from these three monarchs were not attention given to the fact that some of the peculiarities of art appeared elsewhere much earlier or much later. Thus, the new palace at Stuttgart, begun in 1746, displays scarcely any traces of the *baroque* (Louis Quatorze), and is yet devoid of the sobriety of the Louis XVI. manner, while it has architectonic details and decorations which show sufficiently the widespread influence of a return to the antique, though at this date the much more widespread *baroque* reminiscences are found in other places, and the *rococo*—the negation of every architectonic idea—was still in full sway.

Dwelling-houses.—The art of the eighteenth century had its seat in the courts of the princes; it had its branches in the dwellings of the burghers, but there it had not always that delicacy which pleased as in the courtly stem. We have stated before that the essentially Gothic city-residence with its gable and oriel ornamented with *baroque* decorations endured throughout the entire seventeenth century; the sober tendency of the eighteenth century did away with the greater part of these *baroque* forms, and greater simplicity—that is, a still more thoroughgoing homely plainness—took its place. Nevertheless, a few unsymmetrical *rococo* volutes curled over the surface above the window-architraves, and proved that the old tendency remained intact. The honorable burgher in the seventeenth century retained his cherished home, his modes of thought, and his occupations, yet dressed them in modern forms which he had derived from church and palace, as if to show that he was abreast of his time; perhaps even with the secret thought that he would do as the great lords did—that he would accept the deception of the time as his education, just as he had brought many of the manners of the court into his house.

As the necessity for an architectonic set of forms came in; as men began to compare the *rococo* with really purer forms and learnedly discussed the necessity of replacing degeneracy with something better; as the educated architect, in the conviction that now all must be done otherwise than it had been, constructed his works theoretically, but never very practically,—it came about that through the foreign set of forms which he used the plain burgher's residence fell into disgrace, and the burgher at last believed that an educated architect must understand his wants, his occupation, and his modes of life better than he himself understood them. Then he despoiled his dwelling of all its essential parts and built it of the unessential: he made his home in a palace shrunk to a minimum, and even contented himself with a fragment of such a shrunken palace; and, since the house would not accommodate his trade and his modes of life, he adapted his trade and his modes of life to his house.

It was indeed in good part a result of the great deception of the eighteenth century that the aristocracy, when looking out of the windows of their palaces, desired to see as far as was practicable on the outside a continuation of that unreal world with which the *rococo* supplied them within. They wished to gaze, not upon irregular streets with houses as diverse as were the occupants themselves, but upon symmetrically-arranged dwellings in which nothing but uniformly ideal shepherds might be imagined, while in the quiet streets no inharmonious crowd should offend their ears. Still, now and then some burgher was cruel enough to destroy this ideal by a dung-heap in front of his doors or by something absolutely essential to his trade, thus showing how rude and unideal this real world is.

Theatres.—It was natural that the theatre should have a surpassing importance for such a world, and thus in all the princely courts arose theatres which were not entirely meant for the small circle of the court, but, that they might be filled, were open to the well-dressed burghers, who were expected, or even enjoined, to attend in the evening to add to the splendor of the show and to make more attractive the spectacle which met the gaze of His Serene Highness when he entered his box. These theatres, with their luxuriously-ornamented auditoriums, afforded a rich field for the exercise of the *rococo*. Most of them were afterward burned, and those remaining were adapted in their interiors to the ideas and tastes of other times; still, that of Baireuth and the Royal Theatre of Munich, together with a few others, show in what manner the architects, and still more the decorators, executed their tasks. Not only must the auditorium be decorated, but the stage itself must be in harmony with it, and must have its ideal landscapes, shepherds, etc.

Some theatre-architects who made the structure most sober decorated the auditorium pompously, designed the decorations of the stage, and partly painted it themselves. We have already mentioned the Bibbienas. Giuseppe, son of Francesco Bibbiena, worked in Vienna, Dresden, and Berlin upon the theatres and for the court ceremonials, and his son Carlo was employed as a theatre-decorator at Baireuth, Brunswick, Munich, and

Berlin, as well as in England, Sweden, Denmark, France, Spain, and Russia.

Under Frederick the Great building was actively prosecuted in Berlin and Potsdam. W. von Knobelsdorff built the opera-house at Berlin in 1741, the castle and the one-storey Sans-Souci, at Potsdam, and Büding executed the new palace. Karl von Gontard built the marble palace at Potsdam, as well as the two churches on the Gensdarmenmarkt at Berlin. The cupolas of these churches are converted by a high tambour of small diameter into a veritable tower with Corinthian temple-fronts below on three sides of it, while to the fourth, which is absolutely plain, a small church is attached, so as to make it clearly evident that the places of worship were but a pretext for the erection of two domical towers for the adornment of the square.

On the other hand, St. Hedwig's Church at Berlin is weighted down with a simple round dome of great diameter, for, though a correspondingly large space can at a reasonable cost be enclosed in this way, the unadorned structure in its soberness contributes little to the adornment of the city, notwithstanding its Corinthian temple-portico.

The University of Berlin, three storeys high, with a central structure and two projecting wings embracing a fore-court closed by a palisade, is magnificently simple in its lines, but remarkably plain. It was built (1754-1764) for Prince Heinrich, brother of Frederick the Great.

The return to classicism progressed rather quickly, but not abruptly. We have already said that the castle at Stuttgart inclines in this direction, and we have now to state that the University of Berlin exhibits the same tendency, while St. Sulpice at Paris is another instance.

This direction is still more definitely taken by the magnificent domed Church of Ste. Geneviève at Paris, erected by Soufflot; it was commenced in 1756 and finished in 1790. This, like many other churches built since St. Peter's at Rome, especially those at Berlin just described, follows a new system by which a high tambour dominates both arms of the cross and the dome and gives the entire domed structure the appearance of a tower (*pl.* 48, *figs.* 4, 5).

In 1763-1772 the Place de la Concorde—then called Place de Louis XV.—was laid out. On the north side of this two uniform palaces were erected for no other purpose than the decoration of the Place. These show a notable return to classicism, and have colonnades two storeys high. The architect was Jacques Gabriel, a pupil of the younger Mansard.

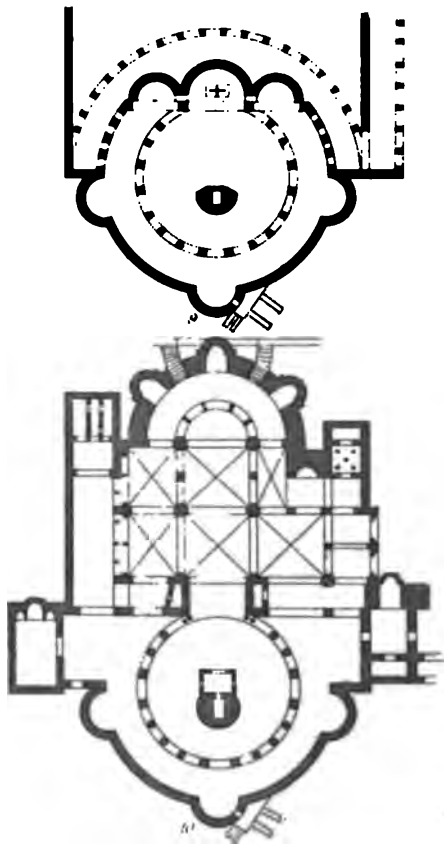
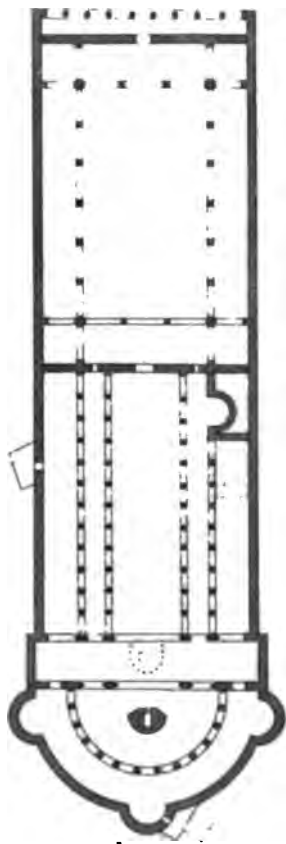
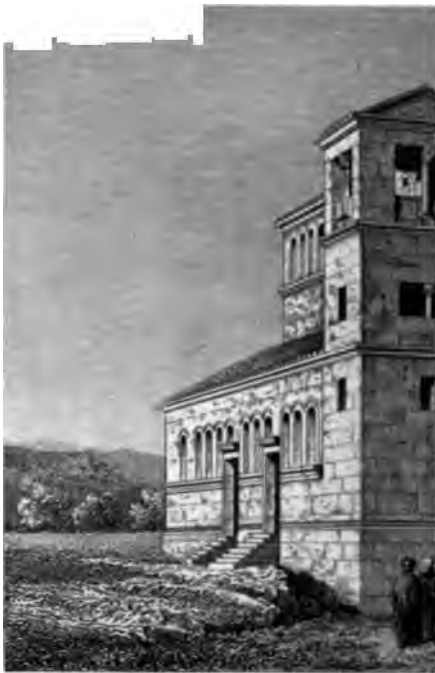
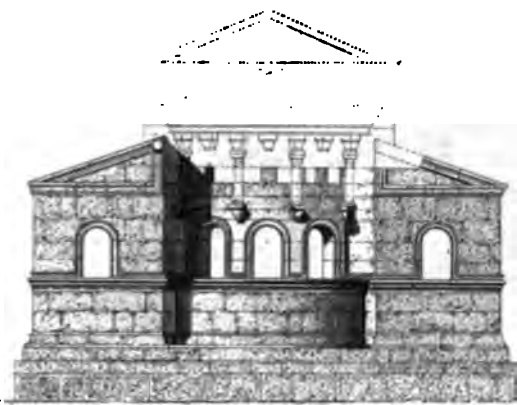
The royal library at Berlin, built in 1780, shows in its fantastic forms the tendency to replace straight lines by curved ones wherever possible. It forms a mixture of the *baroque* and the *rococo* in which the entire fancifulness of both is reproduced, but, like another similar work of that period, it is out of place in that sober world in which the tendency toward classicism is everywhere apparent. Only a few years after the death of Frederick II. there was erected in Berlin a structure belonging to this manner

that gave the deathblow to the *rococo*, and to all other mannerisms that still remained. The Brandenburg Gate of Berlin (*pl.* 49, *fig.* 5), built (1789-1793) by J. G. Langhans in imitation of the Propylæa at Athens, exhibits on a large scale the return to pure and sober forms, and did not, therefore, fail to exercise a decisive influence.

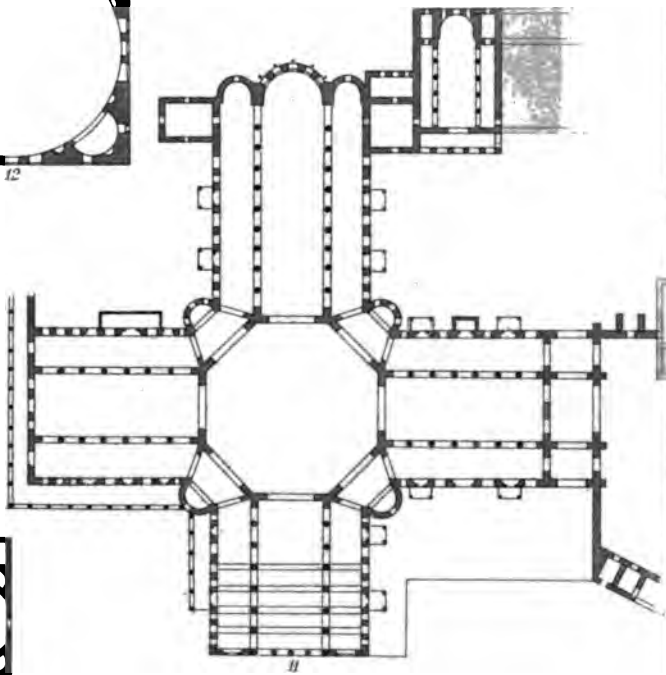
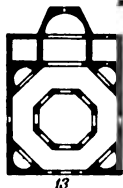
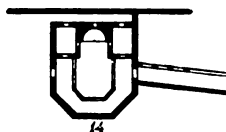
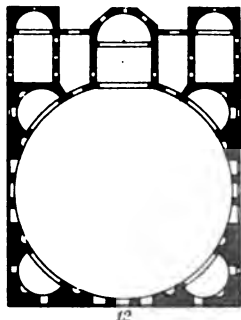
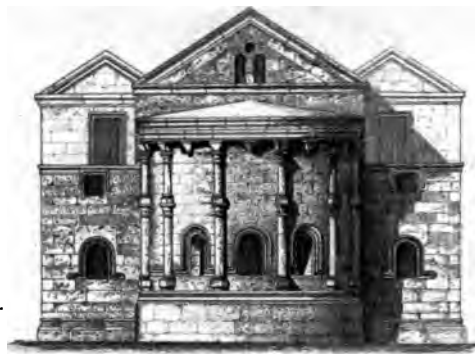
6. MURAL DECORATION.

Romanesque.—In the Architecture of the Middle Ages the Romanesque style developed an elaborate system of coloring of architectural details and ornaments, such as columns, capitals, friezes, and mouldings, wherein the main colors utilized were red and blue, together with occasional gilding. The color-effect was heightened by the addition of paintings of sacred subjects on the extended wall-spaces afforded by the church-architecture of the Romanesque period.

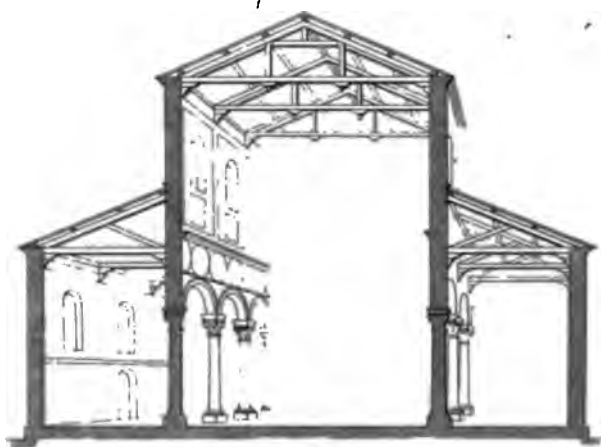
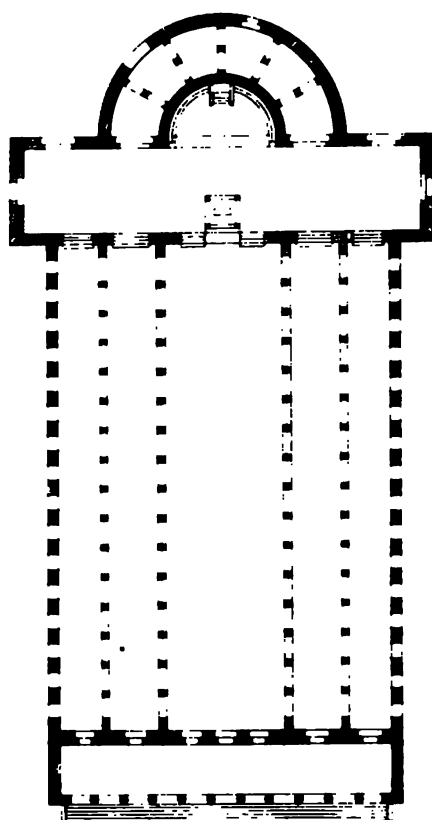
Gothic.—In Gothic architecture the coloring of details was less practised, for the same reason that obtained in the case of Corinthian architecture—namely, the smallness and the variety of the sculptured detail. On the capitals of Gothic columns the sculptured foliage was frequently gilded, the ground being generally colored red, while the mouldings were usually decorated with gilded stars upon a blue ground or with paintings of figurative subjects. Wall-paintings also found a more restricted application, owing to the absence of the requisite wall-spaces. They were replaced by the brilliant-colored light-effects produced by window-paintings.



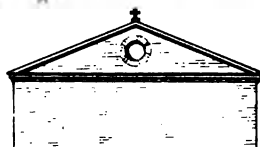
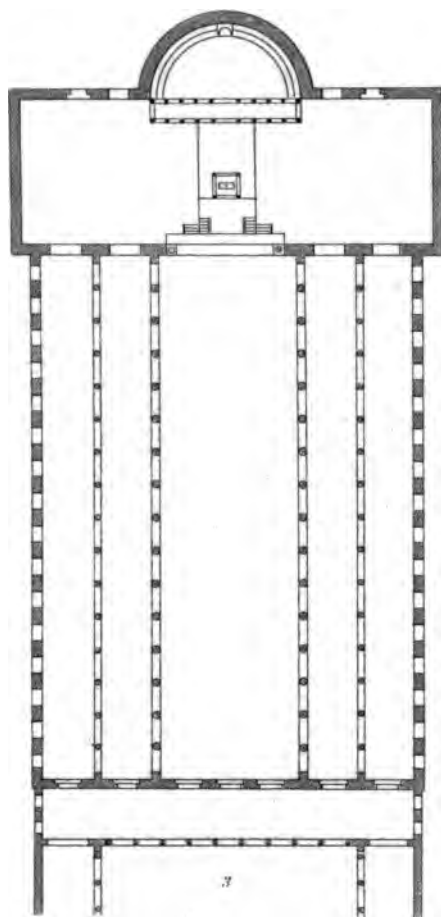
1. Choir of the church at Baqoza. 2. Church at Tourmanin. 3. Choir of the church at Qalib-Louze.
7. Detail from the Great Tomb-Pyramid at El-Barah. 8. Plan of the Church of the Holy Sepulchre (4th century).
9. Sepulchre (10th to 12th century) at Jeru-salem. 11. Plan of the Church of St. Simeon Stylites at Kalat-Semar.



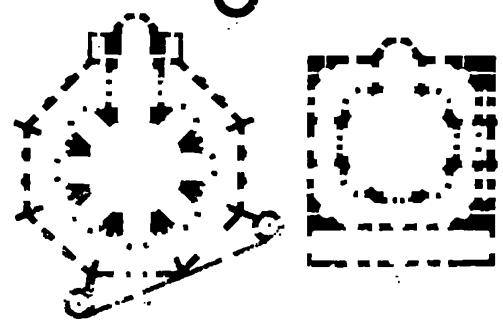
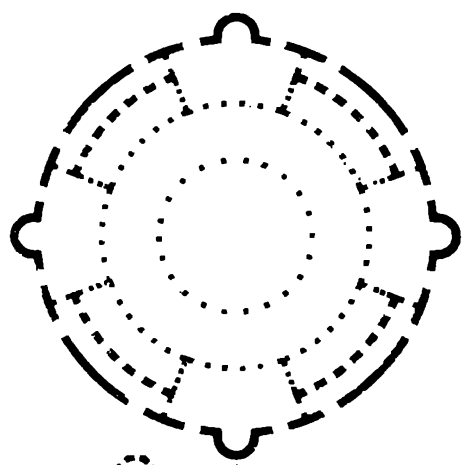
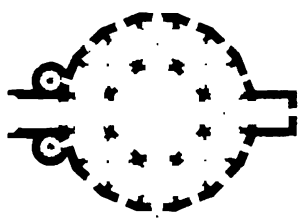
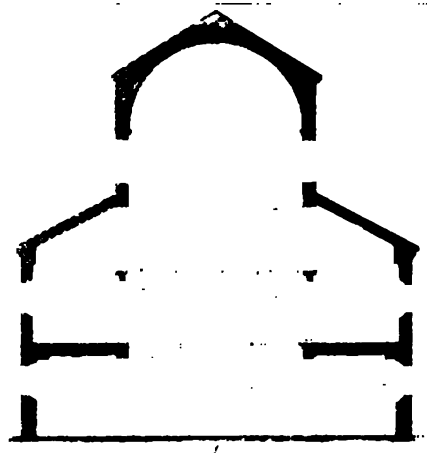
of the church at Qualb-Louzeh. 5. Capital from a church at Deir-Seta. 6. Capital from a church at Baquoza. 7. 9. Plan of the Church of the Holy Sepulchre (7th century) at Jerusalem. 10. Plan of the Church of the Holy the Cathedral at Bostra in the Hauran. 13. Plan of the Church of Ezra. 14. Plan of the church at Moudjeleia.



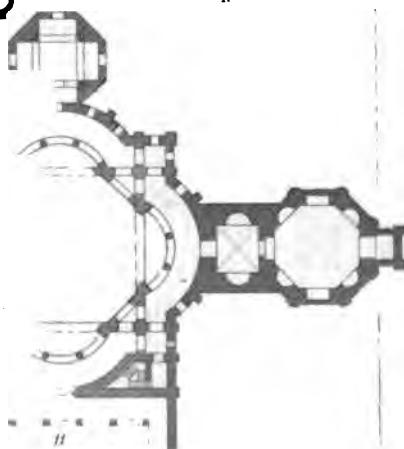
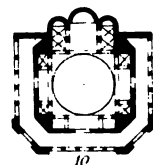
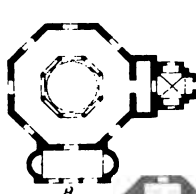
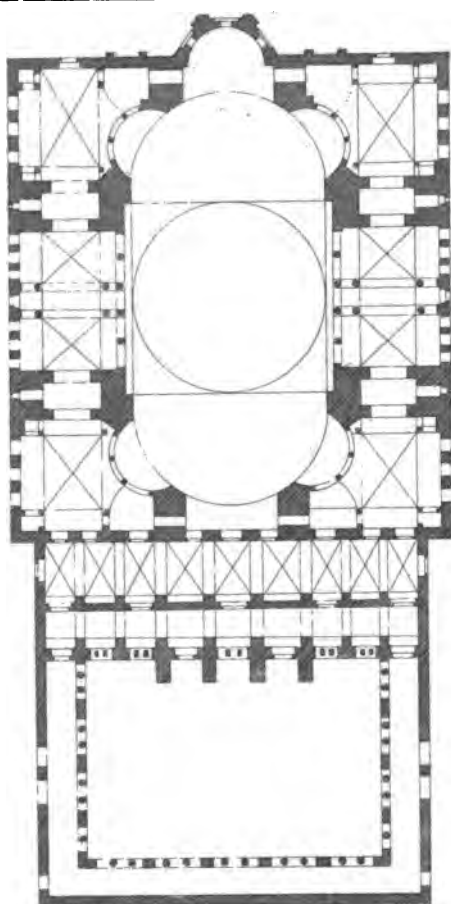
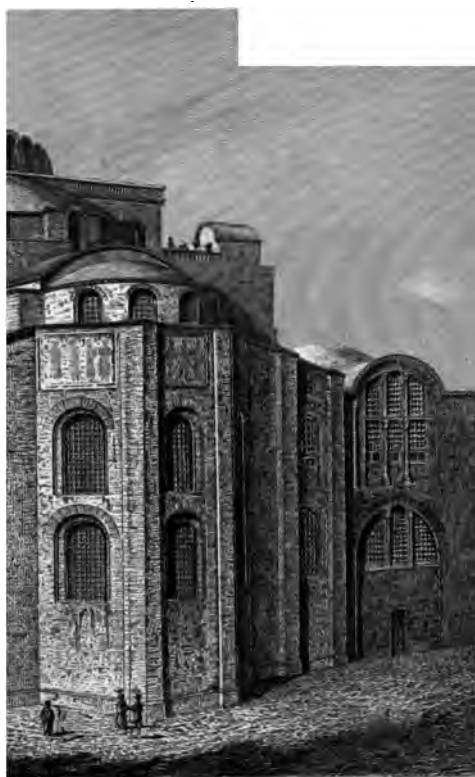
1. Plan of the Church of S. Giovanni in Laterano (St. John Lateran) at Rome. 2. Interior of the Basilica S. Apollinare in Classe, near Ravenna. 5. Choir and campanile of S. Apollinare in Classe, near Ravenna. 6.



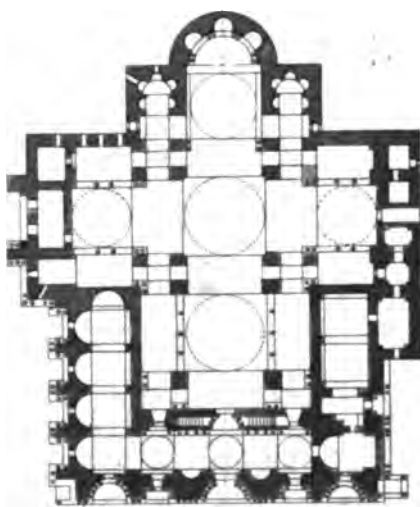
side-the-walls at Rome. 3. Plan of the Basilica of St. Paul's outside-the-walls at Rome. 4. Cross-section of
m of S. Clemente at Rome. 7-10. Capitals from Ravenna.



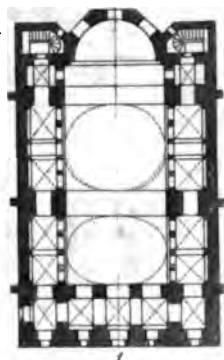
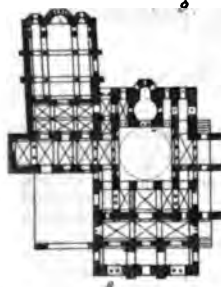
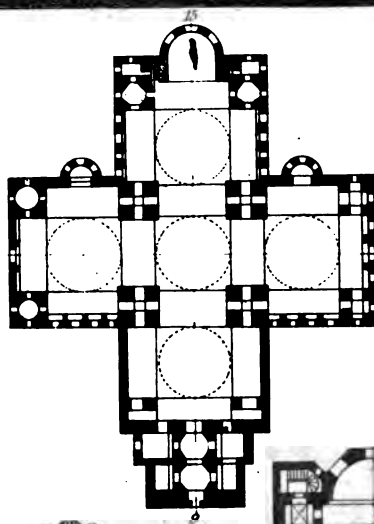
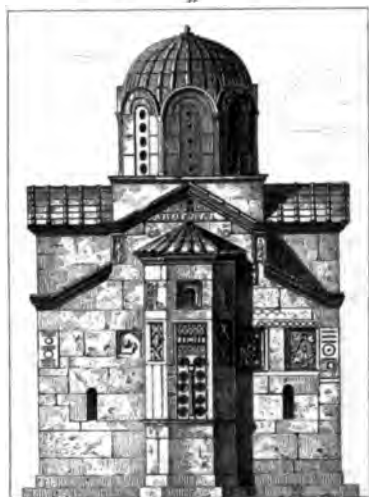
1. Cross-section of the Minster of Aix-la-Chapelle, Prussia. 2. Plan of the Minster of Aix-la-Chapelle. of SS. Sergius and Bacchus at Constantinople. 6. Church of Sta. Sophia at Constantinople. 7. Interior, 8. P Rome. 10. Plan of the Baptistry of Sta. Fosca on the island of Torcello, near Venice. 11. Plan of the Ba



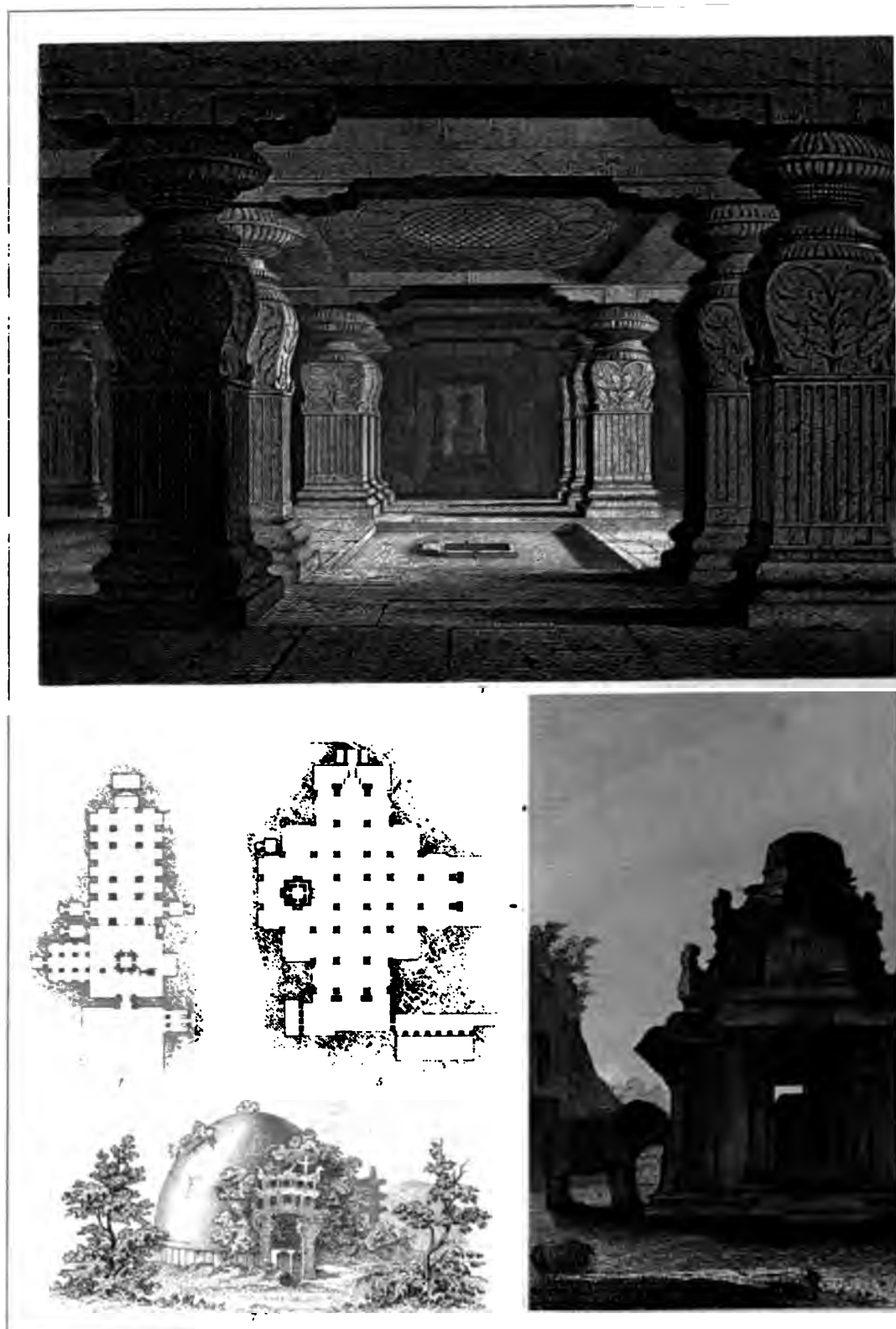
the Rotondo of S. Stefano at Rome. 4. Plan of the Church of S. Vitale at Ravenna. 5. Plan of the Rotondo of S. Stefano at Constantinople. 9. Plan of the Baptistry of S. Giovanni in Laterano (St. John Lateran) at Milan.



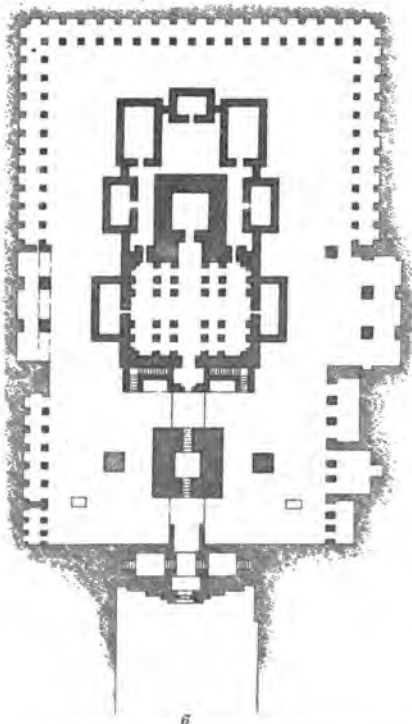
1. Plan of the Church of Sta. Irene at Constantinople. 2. Interior of the Church of Sta. Irene at Constantinople. 7. Plan of the Kamnekarea at Athens. 10. Dome of the church at Daphne, Syria. 11. Dome of the Church of St. Taxiarchis at Athens. 12. Westwork of the Church of S. Maria dell' Ammiraglio (the Martorana) at Palermo, Sicily. 16. Church of S. Giovanni degli Eremiti at Palermo, Sicily.



in of St. Mark's at Venice. 4. St. Mark's at Venice. 5. Plan of the Church of St. Elias at Athens. 6. Plan the Cloister-church of St. Lucas in Boetia, Greece. 9. Plan of the Church of St. Front at Périgueux, France. likon at Athens. 13. East end of the Katholikon at Athens. 14. Church of St. Mary at Semendria, Servia. mo, Sicily.



1-6. ROCK-CUT TEMPLES AT ELLORA: 1, Plan of the Temple of Indra; 2, Fore-court of the Temple of Indra of the Kailasa. 7. Great Tope near Sanchi.



he Temple of Indra; 4, Temple of Viswakarma; 5, Plan of the Grotto-Temple of Dhumnar Lena; 6, Plan

INDIAN AND CH



1. Great Pagoda at Madura, India. 2. Choultry (Inn) at Madura, India. 3. Entrance to the Temple of Confucius of a Mandarin in Tong-Chou, China.

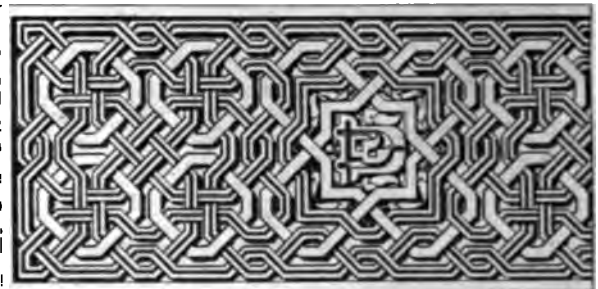


2

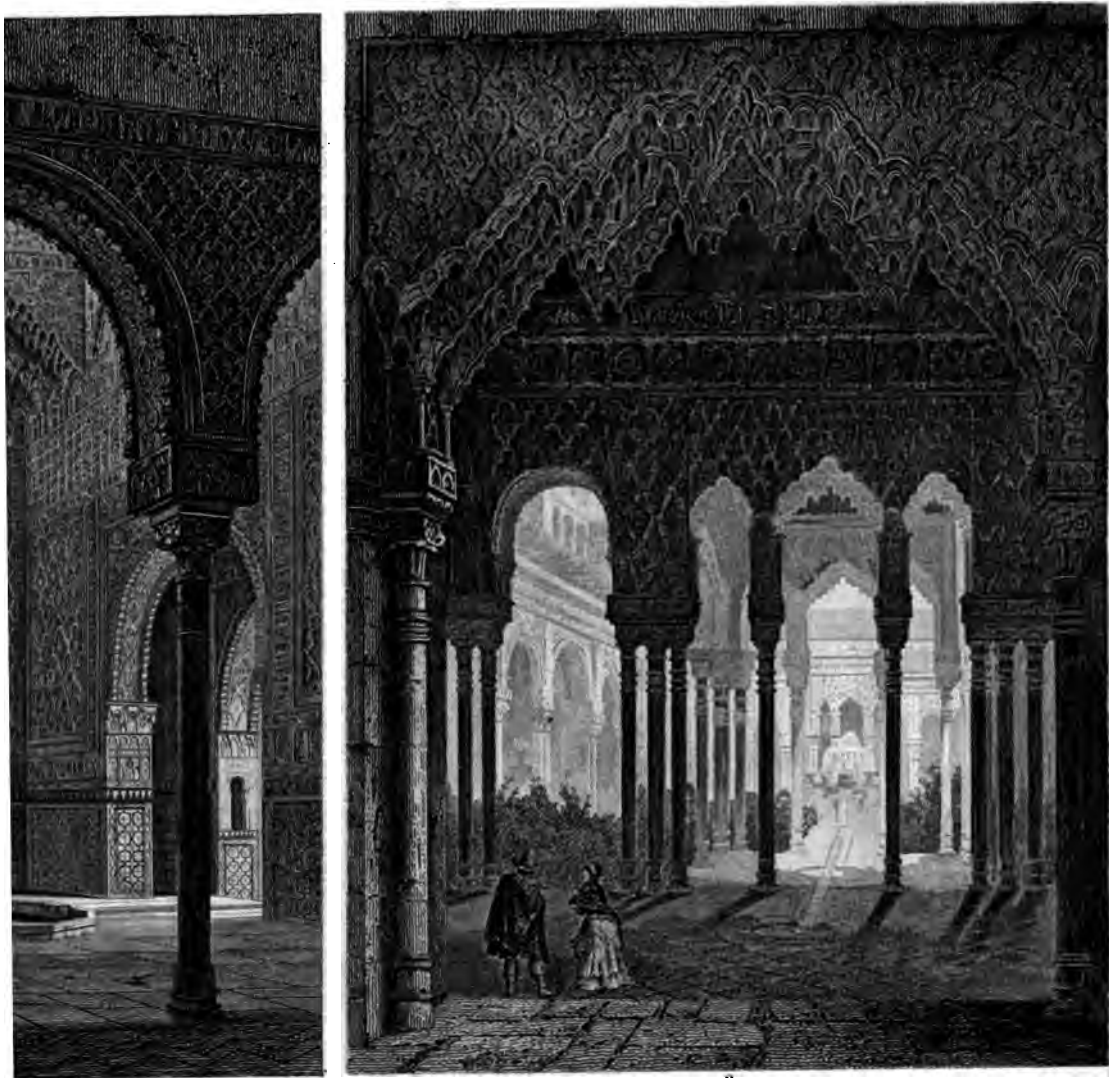


5

ai, China. 4. Boro-Budor Temple, on the Island of Java. 5. Pavilion of the Star of Hope: Dwelling-house



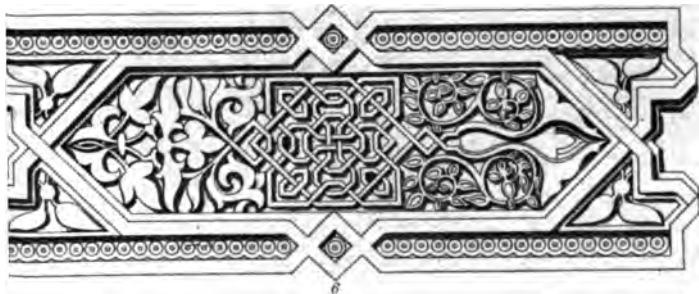
1. Mosque el-Moyed at Cairo, Egypt. 2. Hall of the Abencerrages in the Alhambra, near Granada, Spain. 3. of the church at Kurte-Ardshish, Turkey.



3



9



6

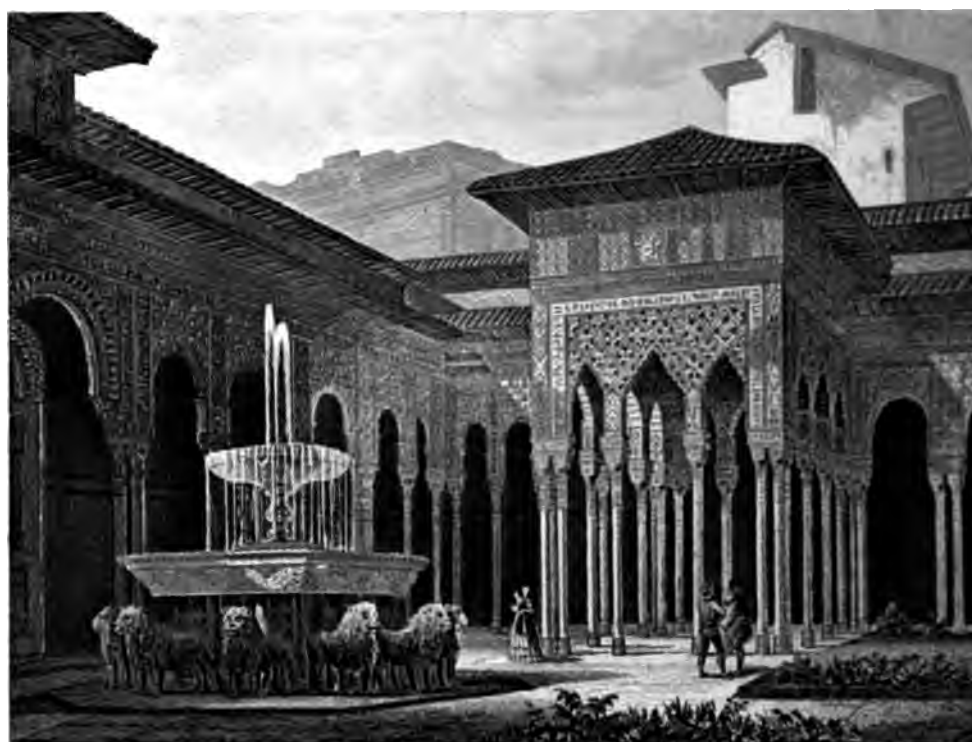


11



7

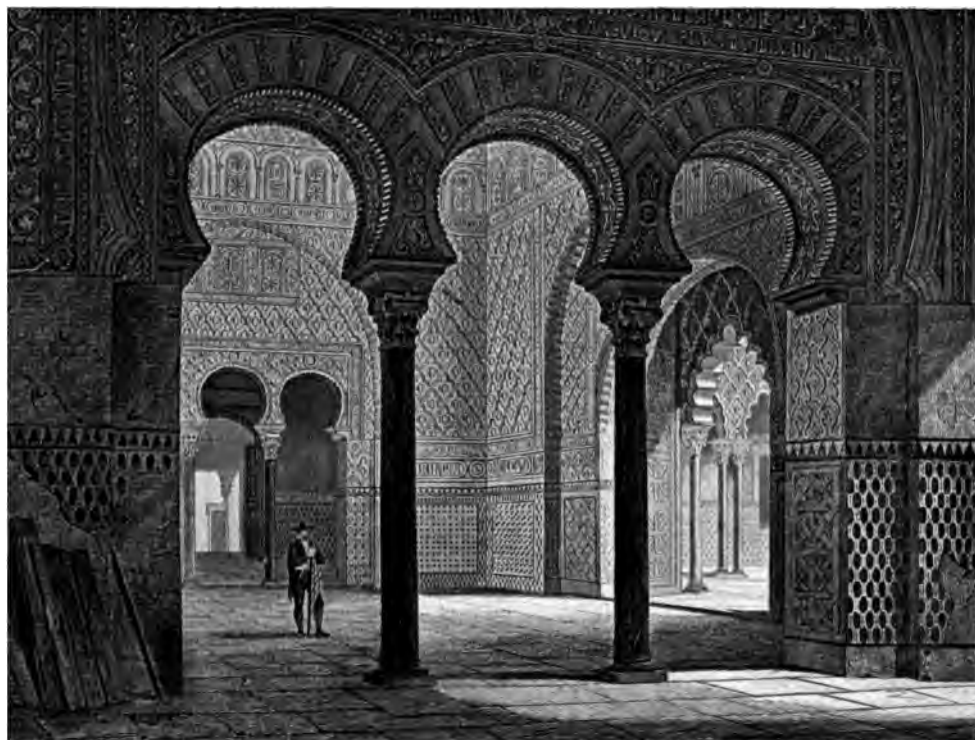
: of the Lions (perspective) in the Alhambra. 4-7. Decorative details of the Alhambra. 8-11. Decorative details



1. Mosque at Cordova, Spain. 2. Don Pedro's Hall in the Alcazar at Seville, Spain. 3. Court



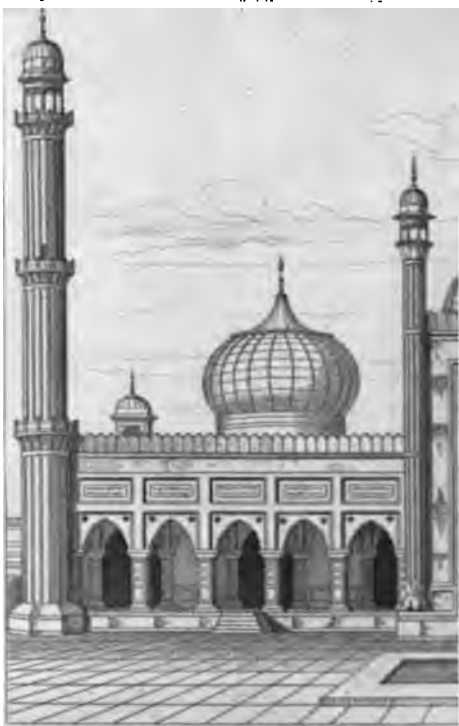
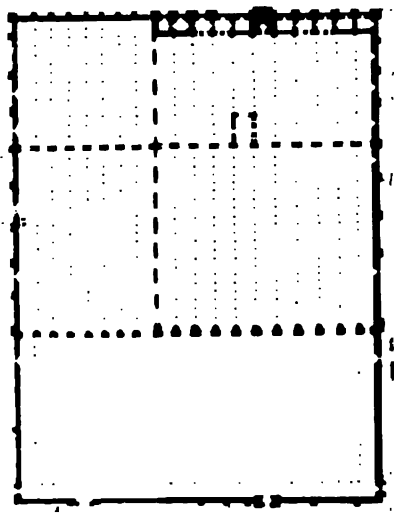
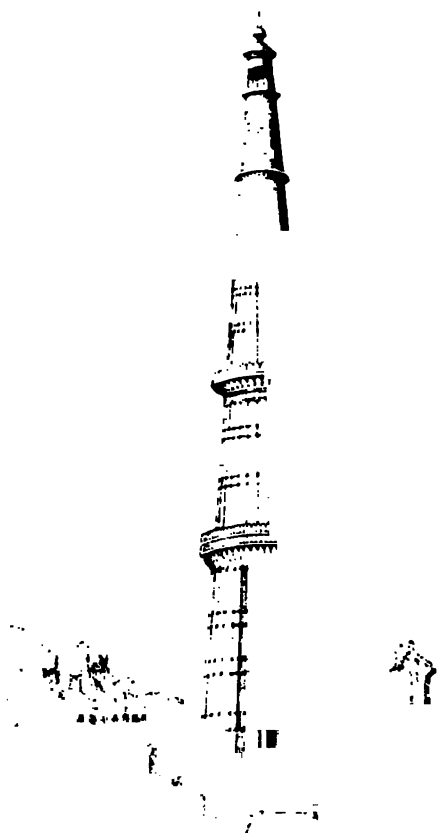
2



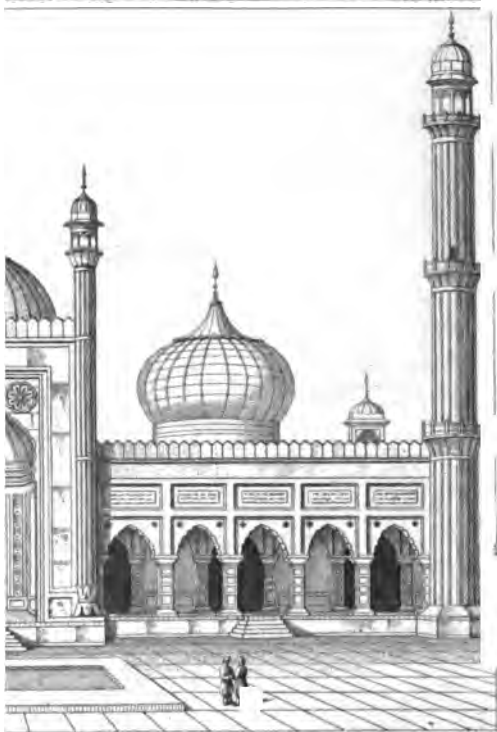
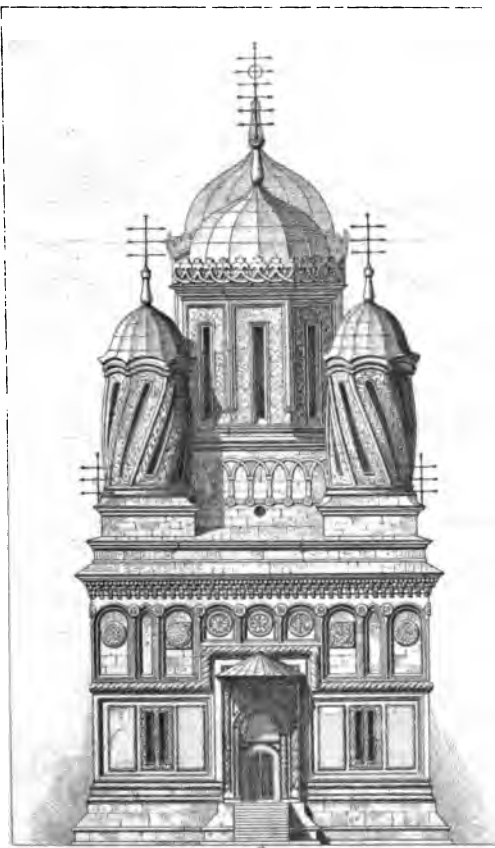
4

e Alhambra, near Granada, Spain. 4. Hall of the Ambassadors in the Alcazar at Seville, Spain.



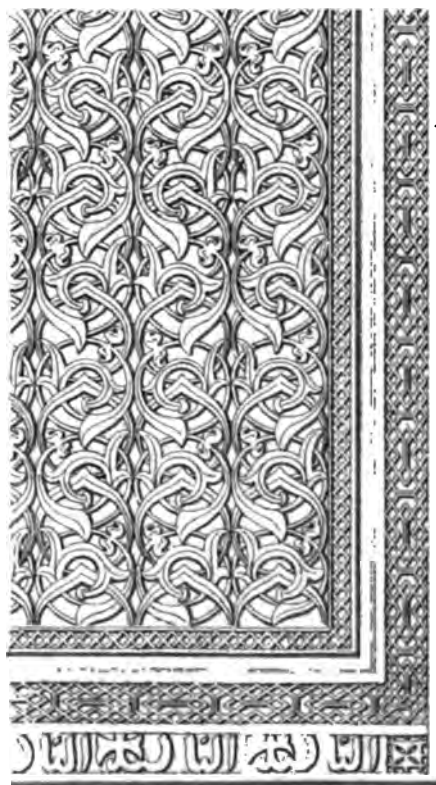


1. Kutab-Minâr (tower), near Delhi, India. 2. Hall in a palace at Madura, India. 3. Church at Kurte-Alhambra, near Granada, Spain

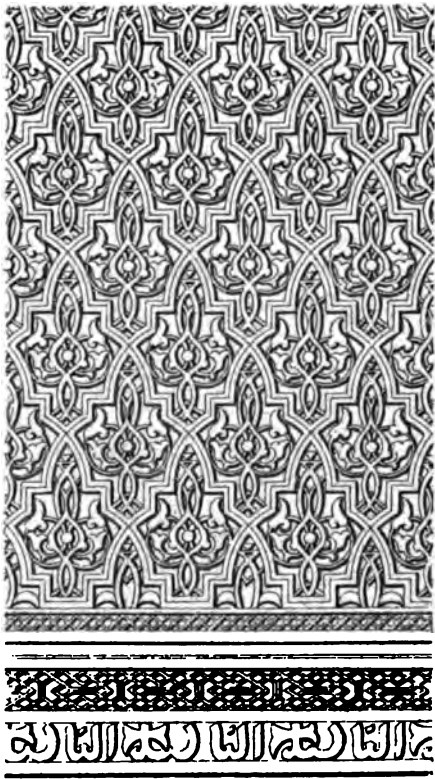


3. Key. 4. Plan of the Mosque at Cordova, Spain. 5. Jāmmā-Musjid (Great Mosque) at Delhi, India. 6. Plan of the

SARACENIC



1. Mosque of the Sultan Suleiman at Constantinople. 2. Mosque of the Sultan Bajazet at Constantinople 3. decorations in stucco in a dwelling-house at Algiers.



Seraskierat (War-Office) at Constantinople. 4. Fountain of the Sultan Achmet at Constantinople. 5, 6. Wall-

1

2



RUSSIAN



1-4. CHURCHES IN Moscow: 1, Georgian (Georgian) Church of the Mother of God (17th century); 2, Church of SS. Nicholas and Stephen (17th century); 3, Staircase of a Russian Boyar in the Kremlin.



1. John Bogoslow in the Kremlin-Rostovski (17th century); 3, Cathedral Vassili Blashennoi (St. Basil); 4, Church

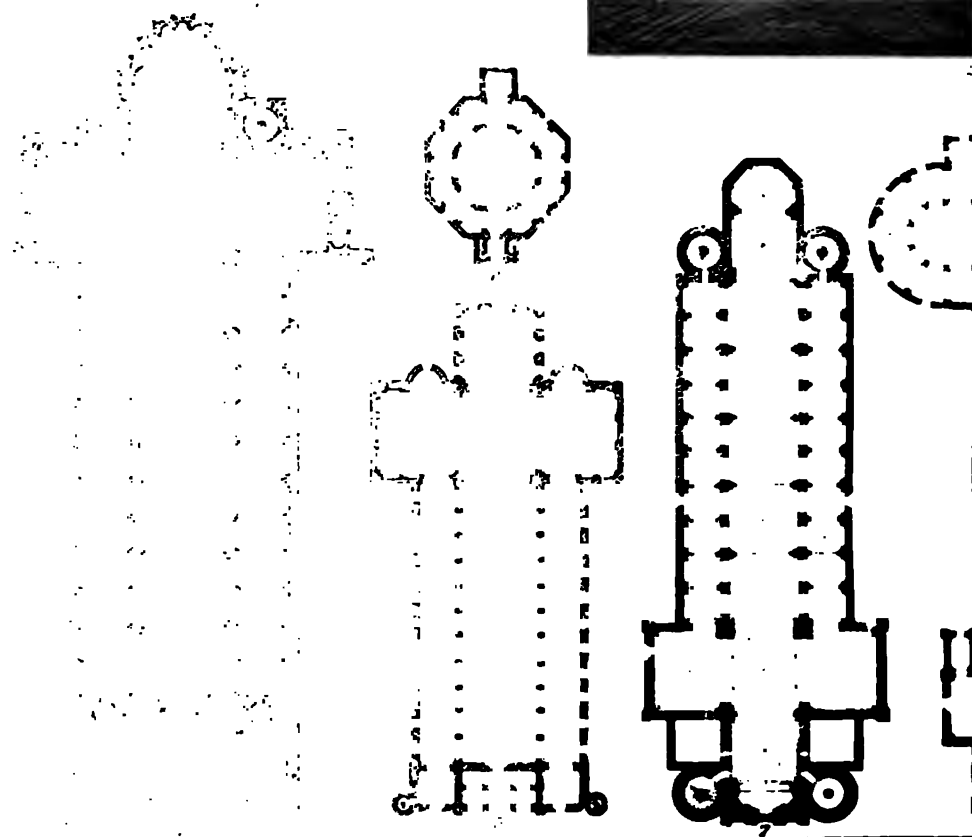
1

1



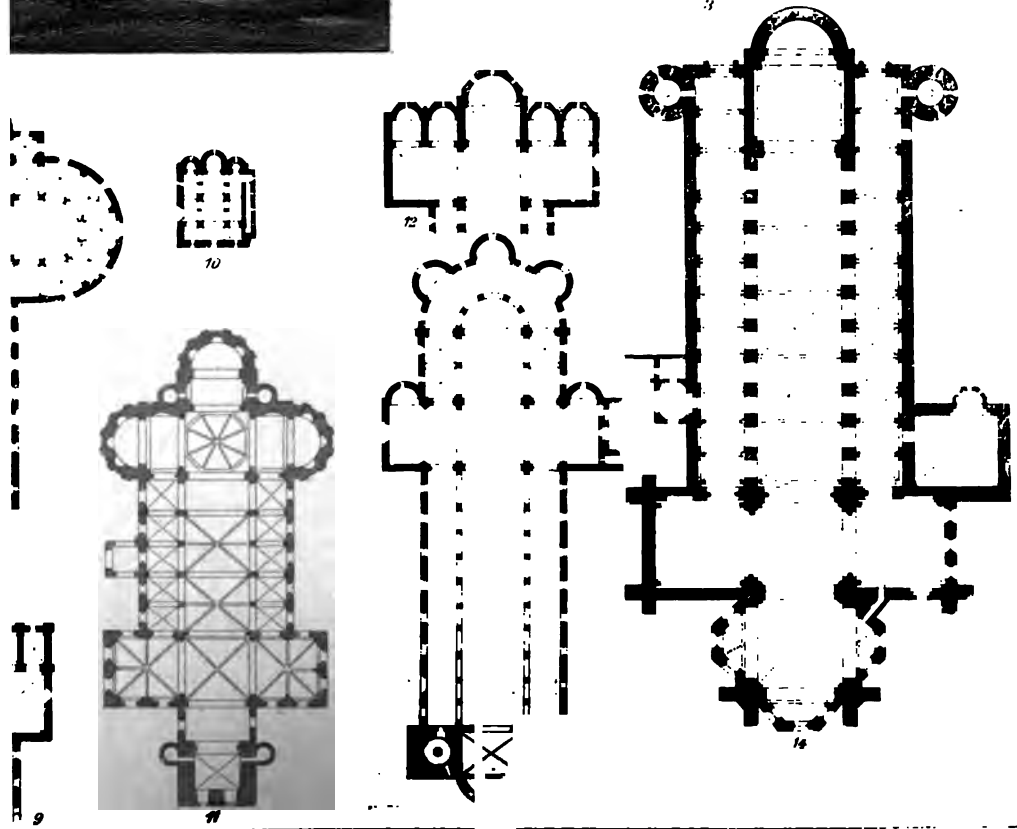
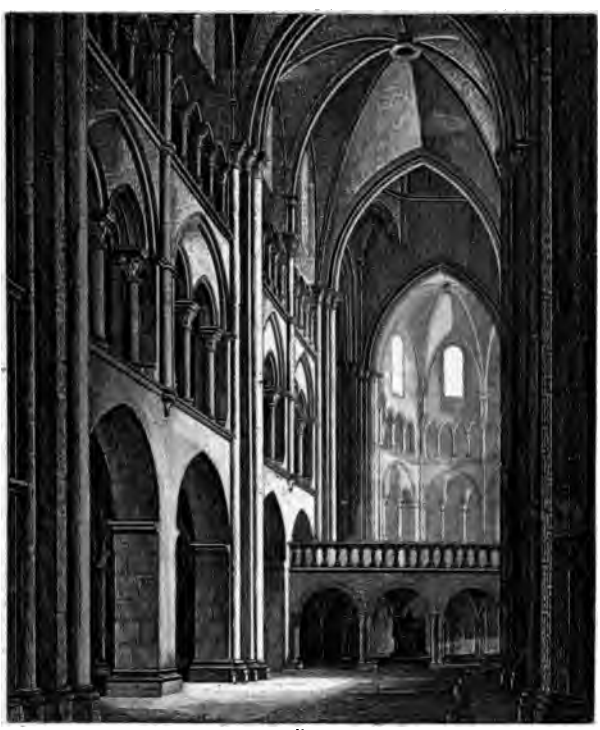
GERMAN.

ROMANESQ



1. Interior of the Church of Gernrode at Cologne. 2. Interior of the (ELEVENTH AND TWELFTH CENTURIES; 4. Cathedral of Speyer; 5. Convent of the Cistercian church at Eberbach; 10. Castle Chapel at Landsberg; 11. (

of Sta. Maria in Capitol
Limburg on the Harde
of the Apostles at Cologne



Interior of the Cathedral of the Nunnery at Otterbach; the cloister church of the Nunnery at Otterbach.

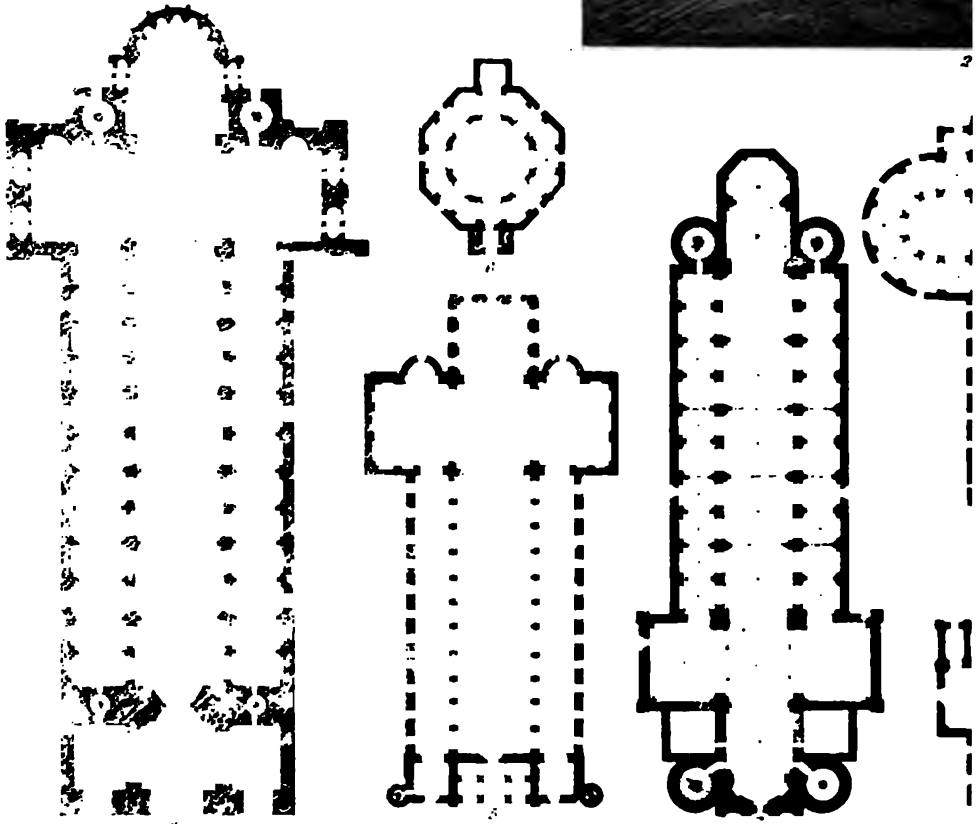
1 OF GERMAN CHURCHES OF THE 13TH CENTURY. 12, Church of the Holy Spirit in Capito, Cologne; 9, Choir of the Cathedral of Mayence.



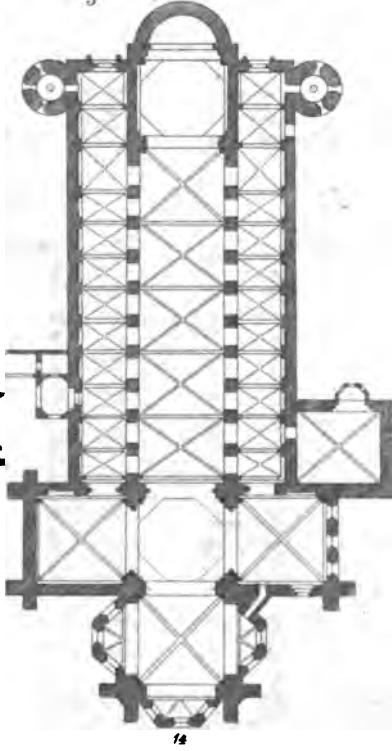
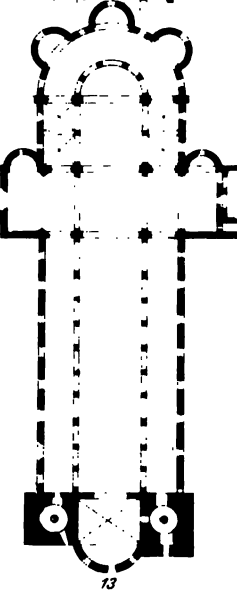
1-4. CHURCHES IN MOSCOW: 1, Grusinian (Georgian) Church of the Mother of God (17th century); 2, Church of SS. Nicolas and Sidelpach (17th century). 5. Staircase of a Russian Boyar in the Kremlin.



1. John Bogoslow in the Kremlin-Rostowski (17th century); 3. Cathedral Vassili Blashennoi (St. Basil); 4. Church



1. Interior of the Church of Gernrode at Cologne. 2. Interior of the Church of Sta. Maria in Capitol.
ELEVENTH AND TWELFTH CENTURIES: 4. Cathedral of Speyer; 5. Convent-church of Limburg on the Hardt;
of the Cistercian church at Eberbach; 10. Castle Chapel at Landsberg; 11. Church of the Apostles at Cologne



Interior of the Cathedral of Limburg on the Lahn. 4-14. GROUND-PLANS OF GERMAN CHURCHES OF THE
he Nunnery at Ottmarsheim; 7, Cathedral at Worms; 8, Church of Sta. Maria in Capitulo, Cologne; 9, Choir
he cloister church at Zinna; 13, Church of St. Godehard at Hildesheim; 14, Cathedral of Mayence.



GERMAN.

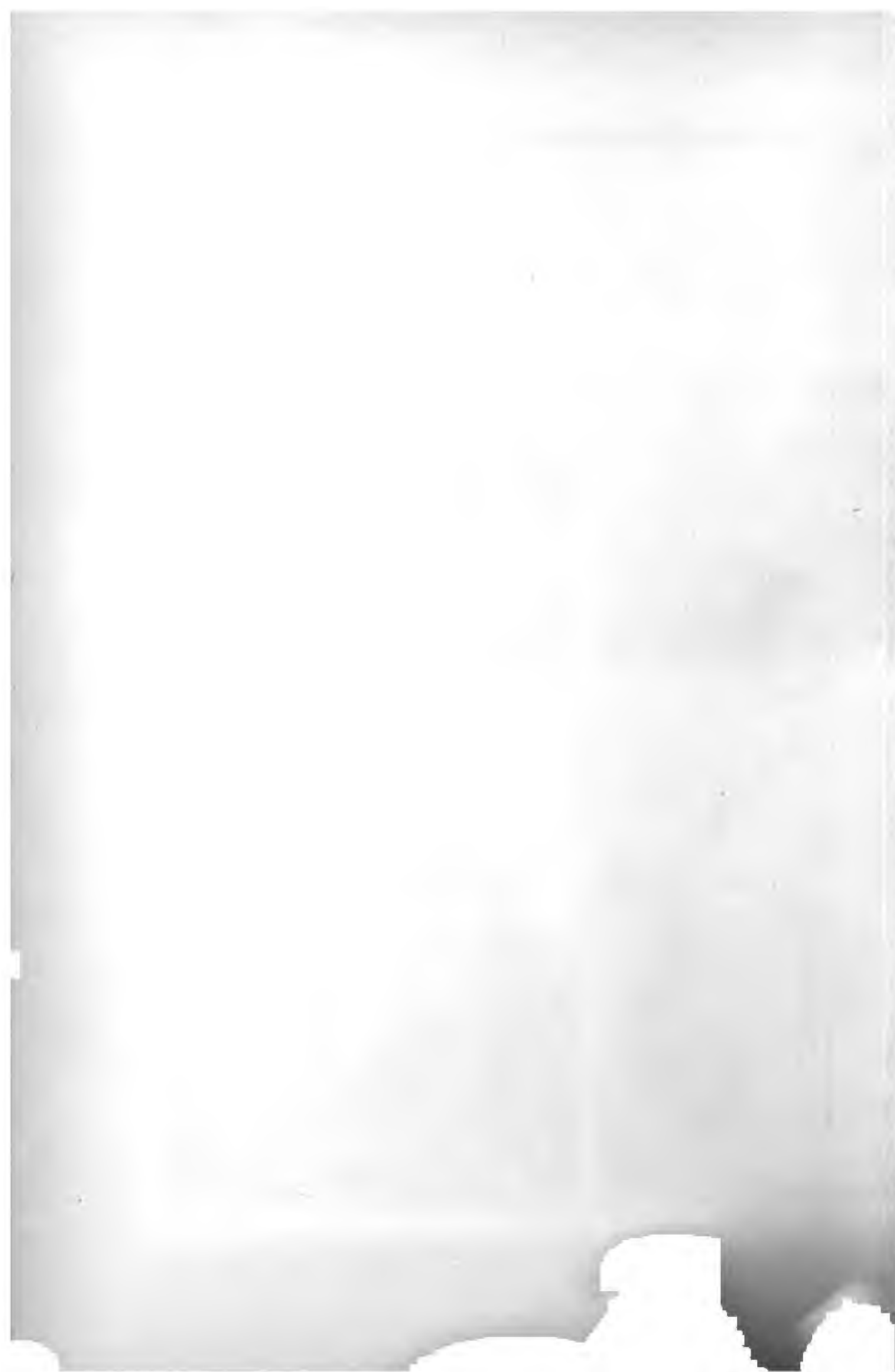
ROMANESQUE

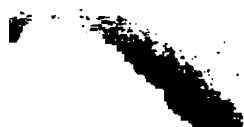


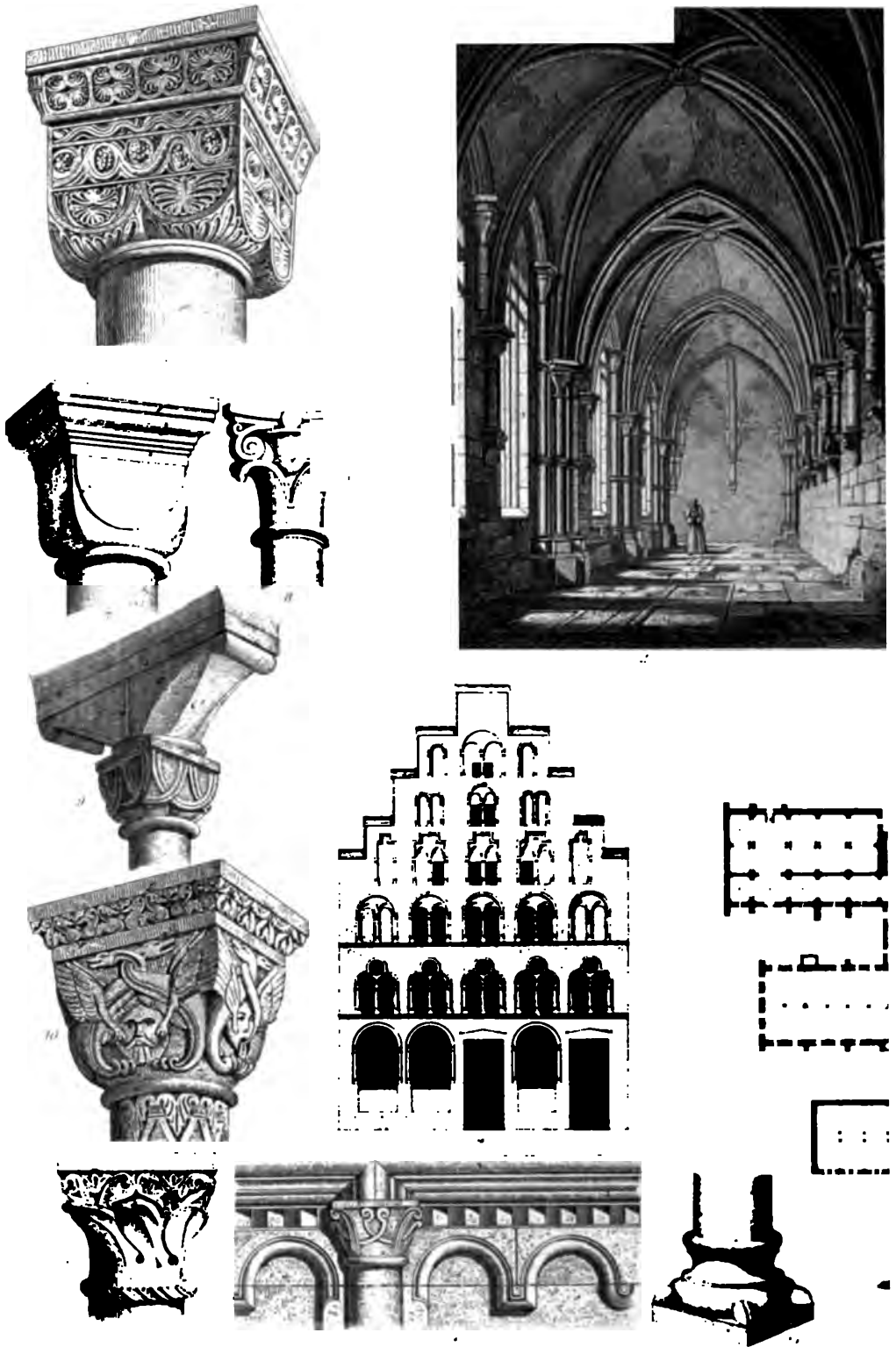
1. Cathedral of Worms. 2. Cathedral of Speyer. 3. Church of the Apostles at Cologne. 4. Cathedra



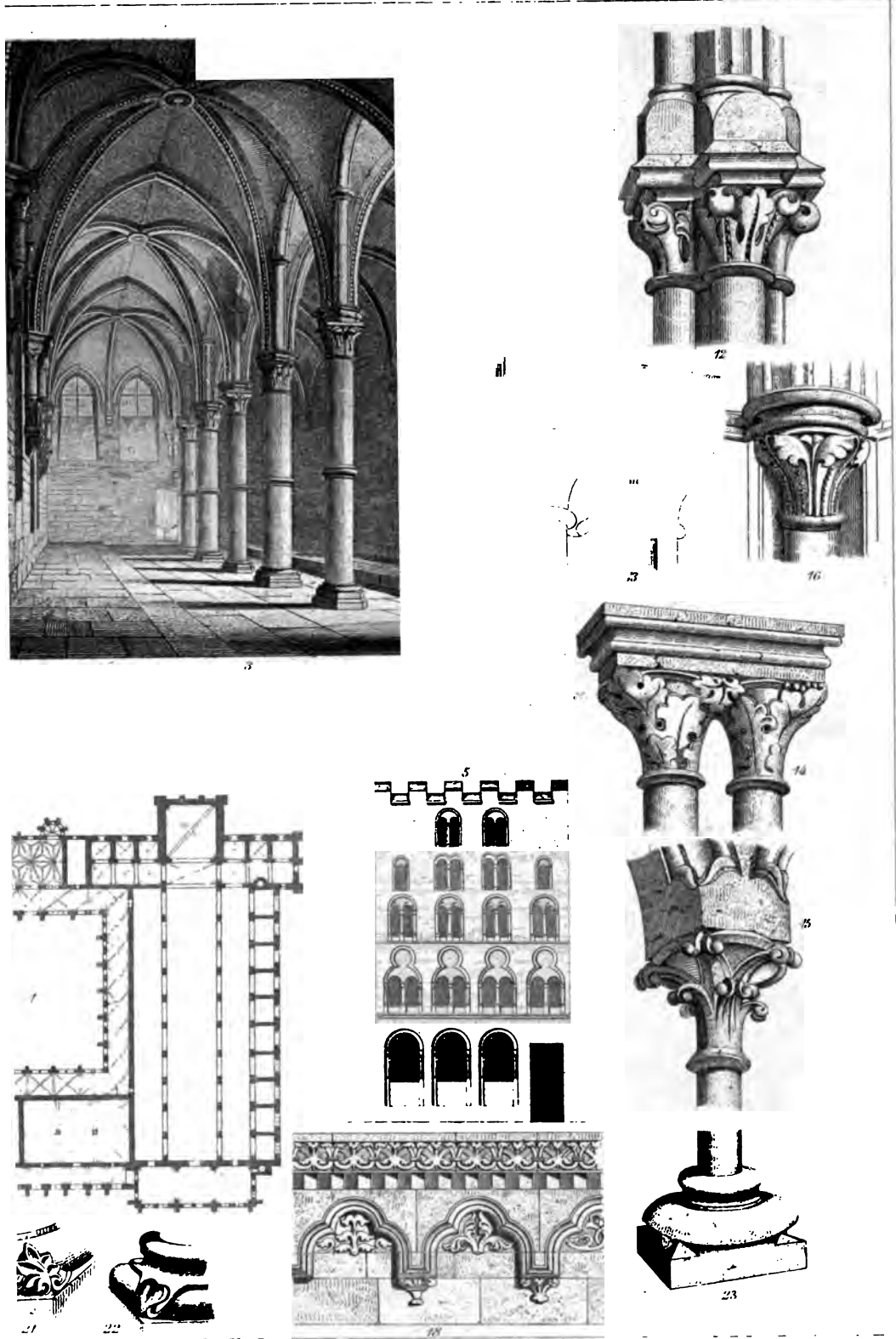
the Lahn. 5. Cathedral of Bamberg. 6. Church at Gelnhausen. 7. Church of St. Gereon at Cologne.







1. Plan of the Convent of Maulbronn. 2. Interior of the southern wing of the Convent of Maulbronn (Münchener). 3. Capital from the Cathedral of Speyer. 4. Capital from the church at Schwarzrheindorf. 5. Capital from the Baptistery of St. Gereon at Cologne. 6-8. Capitals from the Church of the Holy Cross near Vienna. 9. Arch-frieze from the Church of St. Jacob in Hungary. 10. Romanesque pillar-base. 11, 12. Corner orna. 13. Pedestal from the church at Heiligenkreuz.



ie Convent of Maulbronn. 4, 5. Dwelling-houses at Cologne. 6. Capital from the church at Mauermünster
on the vestibule of the Cathedral of Goslar. 11. Capital from the Minster of Basle. 12. Capital from the
vestibule of the church at Maulbronn. 17. Arch-frieze from the Church of the Holy Cross near Vienna.
ases from the church at Maulbronn. 22. Corner ornament of column-base from the church at Heiligenkreuz.



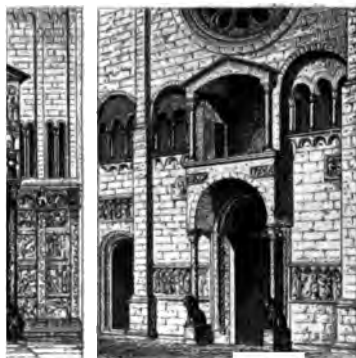


ITALIAN.

ROMANESQUE

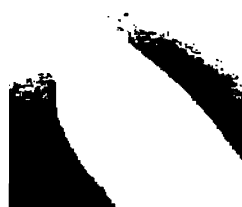


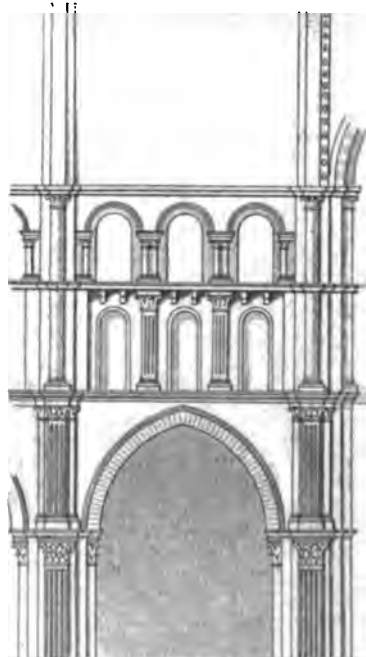
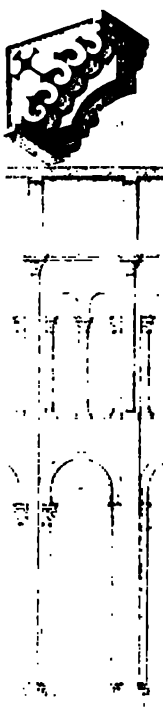
1. Interior of the Church of S. Miniato near Florence. 2. Cathedral and Campanile of Pisa. 3. Interior of the walls at Rome. 6. West end of the Church of S. Zeno Maggiore at Verona. 7. West end of the cathedral. 10. Portal of the Cathedral of Modena.



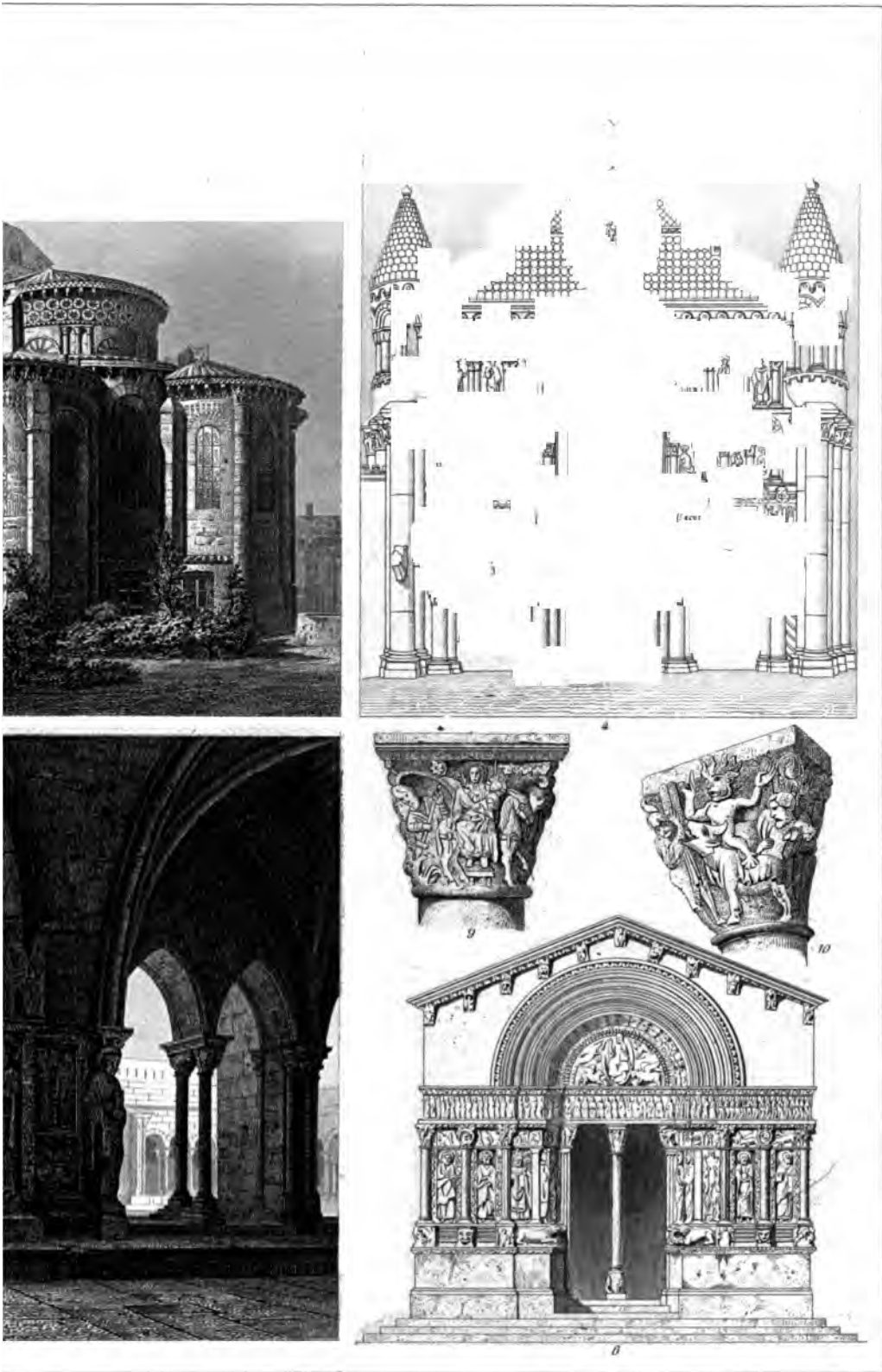
Palatina in the royal palace at Palermo. 4. Cathedral at Trau, in Dalmatia. 5. Cloister of St. Paul's outside Dalmatia. 8. Portal of the Cathedral of Verona. 9. Portal of the Church of S. Zeno Maggiore at Verona.

11





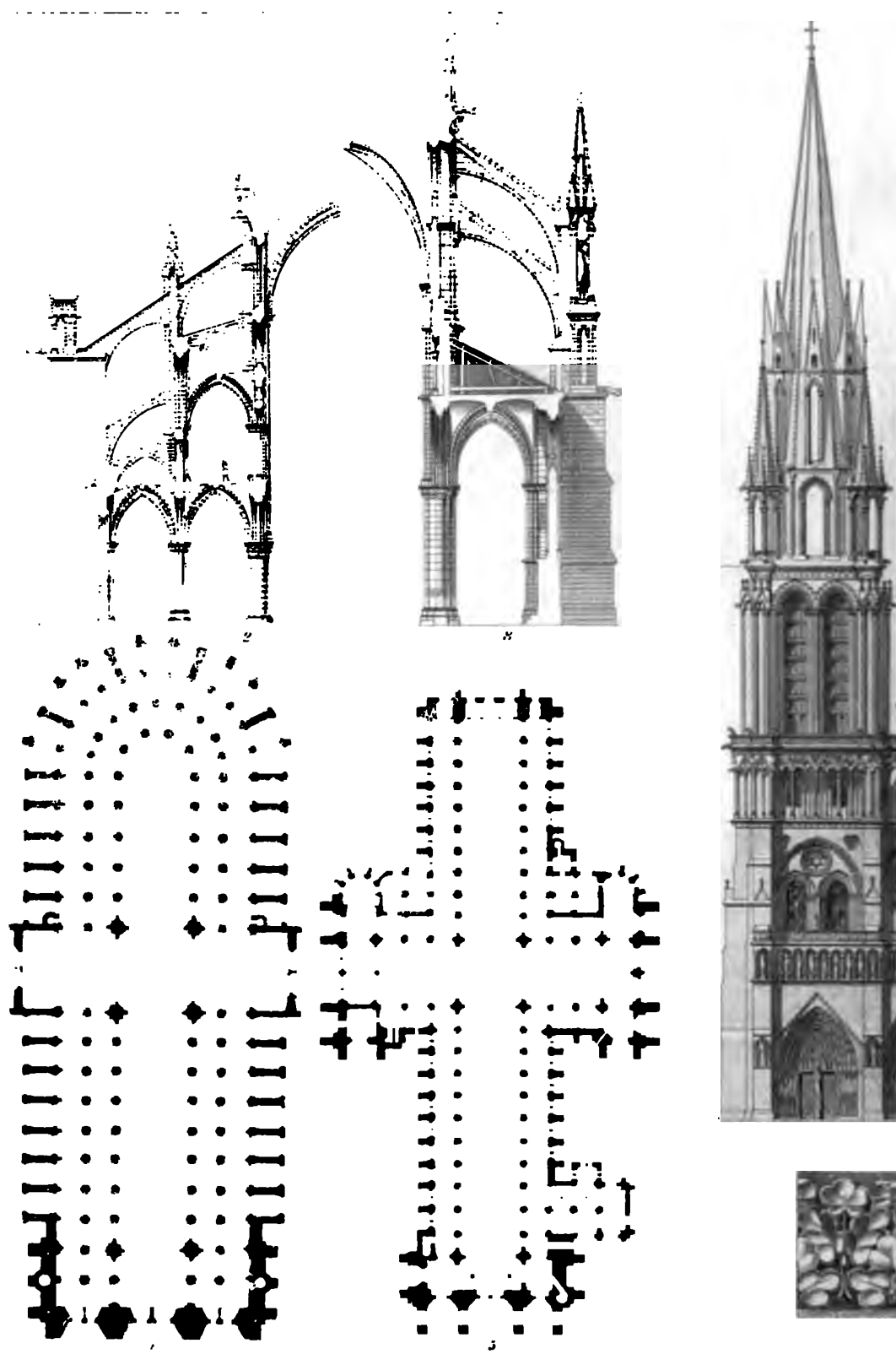
1. Abbey of St. Étienne (Abbaye aux Hommes) at Caen. 2. Church of Notre Dame du Port at Clermont-Ferrand. 3. Portal of the Church of St. Trophime at Arles. 4. System of the nave of the church at Conques. 5. System of the church at Vézelay.



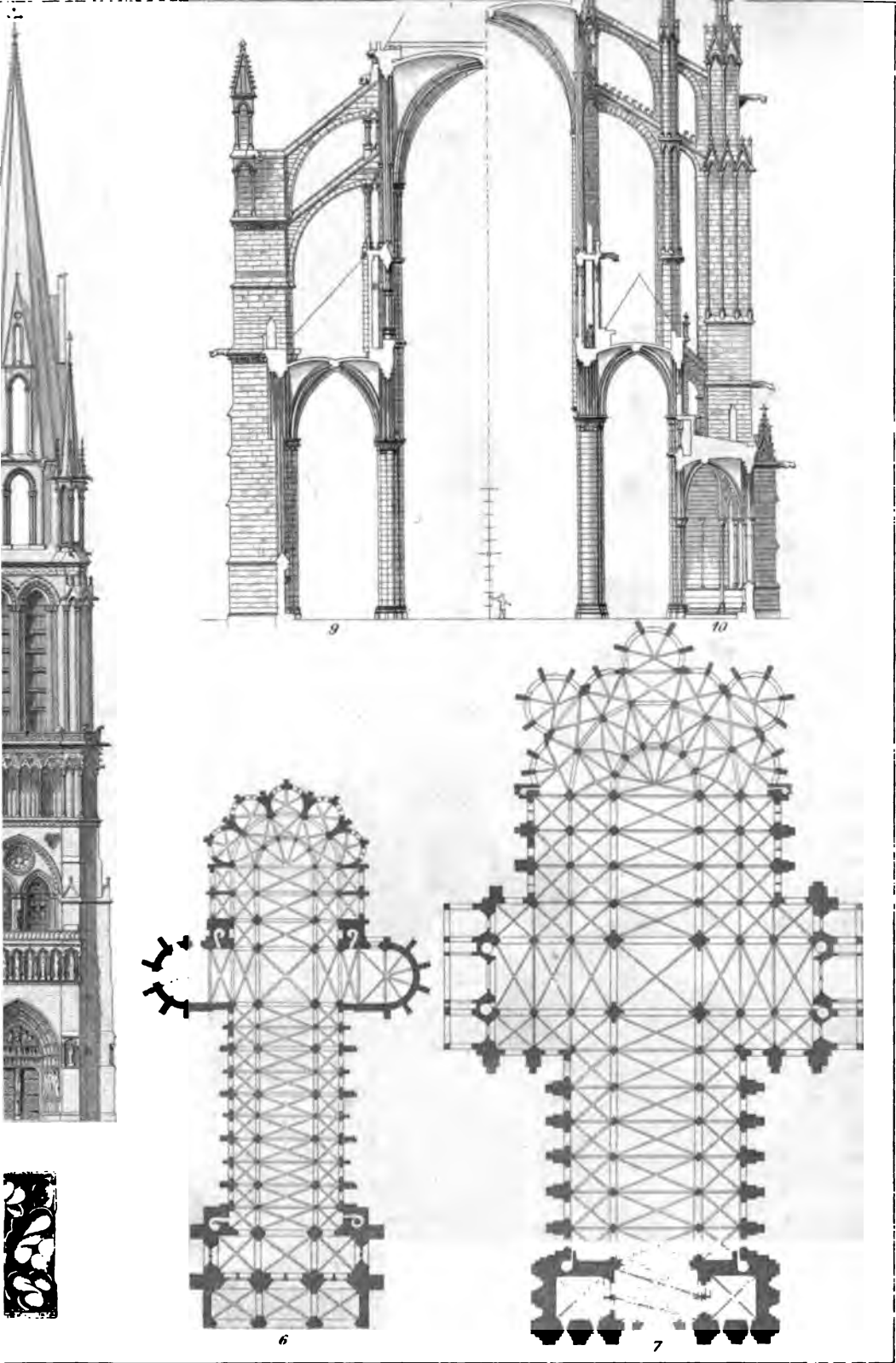
rnice console of Notre Dame du Port. 4. Church of Notre Dame la Grande at Poitiers. 5, 6. Cloister and church at Paray-le-Monial. 9. Capital in the vestibule of the church at St. Benoit-sur-Loire. 10. Capital from







1-4. CATHEDRAL OF NOTRE DAME AT PARIS: 1, Ground-plan; 2, Section of the original nave; 3, Façade
 6. Plan of the Cathedral of Noyon. 7. Plan of the Cathedral of Chartres. 8. Section of the nave of the Cathedr



ding to Viollet-le-Duc's project of the building); 4, Frieze ornament. 5. Plan of the Cathedral of Laon. Section of the Cathedral of Amiens. 10. Section of the apse of the Cathedral of Beauvais.

1

2

3

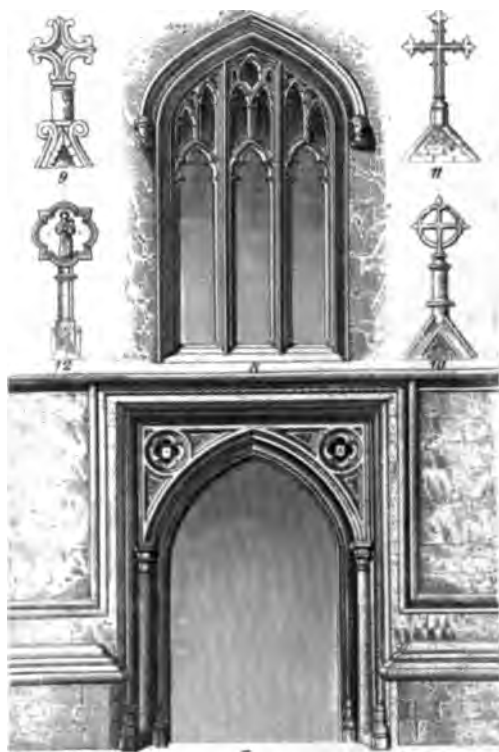
4

5

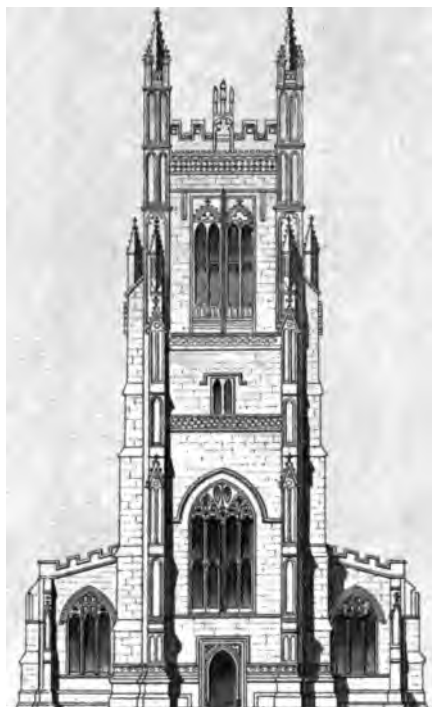


ENGLISH.

GOTHIC



1. Cathedral of York. 2. Cathedral of Canterbury. 3. Church at Saint-Neots. 4. Cathedral of Lichfield. 5. Cathedral of Ely. 6. Cathedral of Exeter. 7. Cathedral of Hereford. 8. Window of the Church of Saint Michael at Oxford. 9, 10. Gable crosses on the Cathedral of York.



3



3



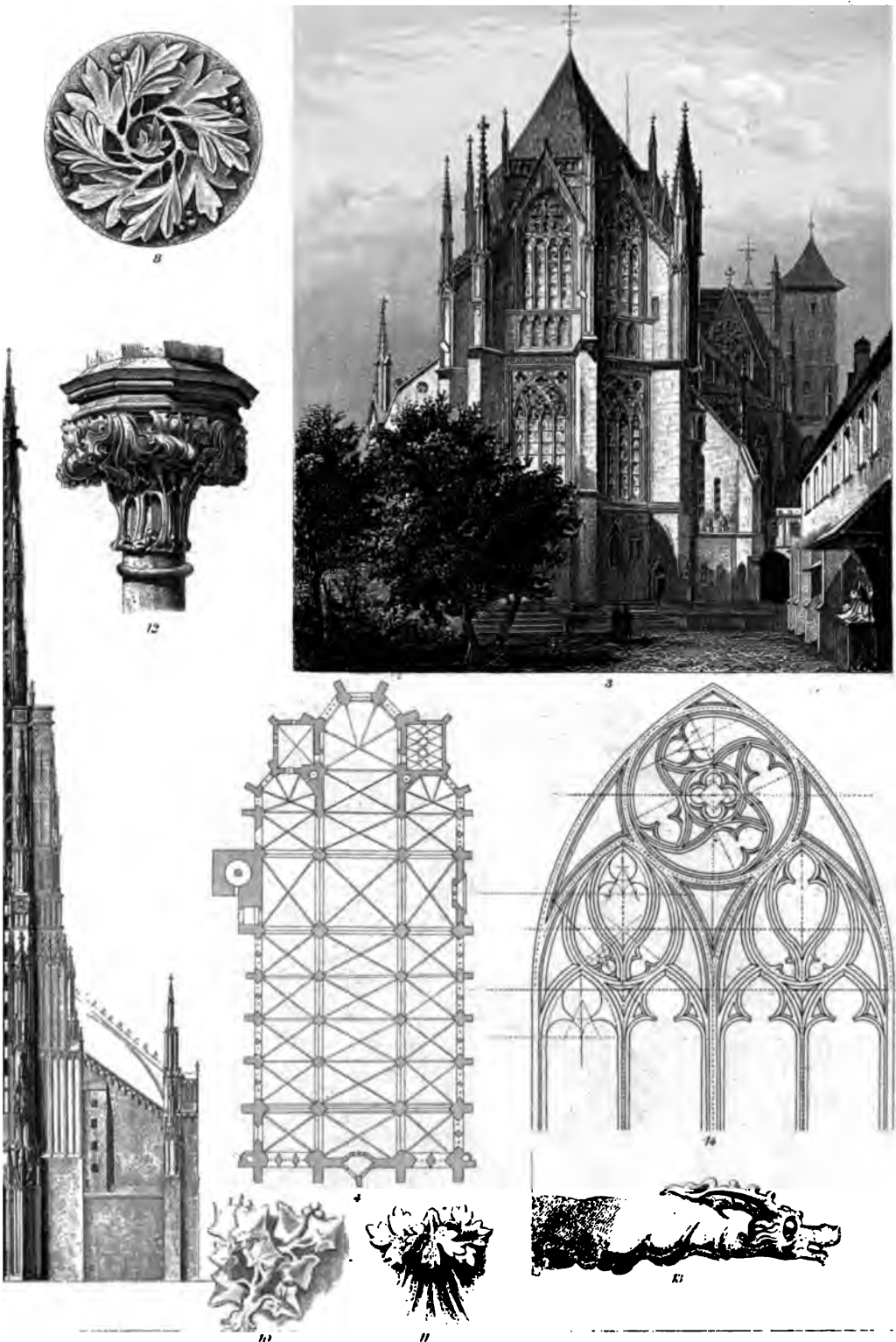
6

of Henry VII. at Westminster Abbey. 6. Roof of the great hall at Westminster. 7. Portal of the church at . Gable cross on Merton College, Oxford. 12. Gable cross on the Mary Church of Gloucester.



1. Church of St. Laurence, Nuremberg. 2. Plan of the Cathedral of Magdeburg. 3. Watercut of the Cathedral of Cologne. 4. Key-stones from the church of St. Our Lady at Esslingen, Wurtemberg. 5. Watercut of the Cathedral of Cologne.

6. Watercut of the Cathedral of Cologne. 7. Watercut of the Cathedral of Cologne. 8. Watercut of the Cathedral of Cologne. 9. Watercut of the Cathedral of Cologne. 10. Watercut of the Cathedral of Cologne. 11. Watercut of the Cathedral of Cologne. 12. Watercut of the Cathedral of Cologne. 13. Watercut of the Cathedral of Cologne.



abon. 4. Section of the nave of the Cathedral of Ratisbon. 5. West façade of the Minster of Ulm. 6. Section of the nave
10, 11. Photographs of capitals from the Minster of Freiburg im Breisgau. 12. Capital from the Church





1. Minster of Freiburg im Breisgau. 2. Minster of Strasbourg. 3. Façade of the



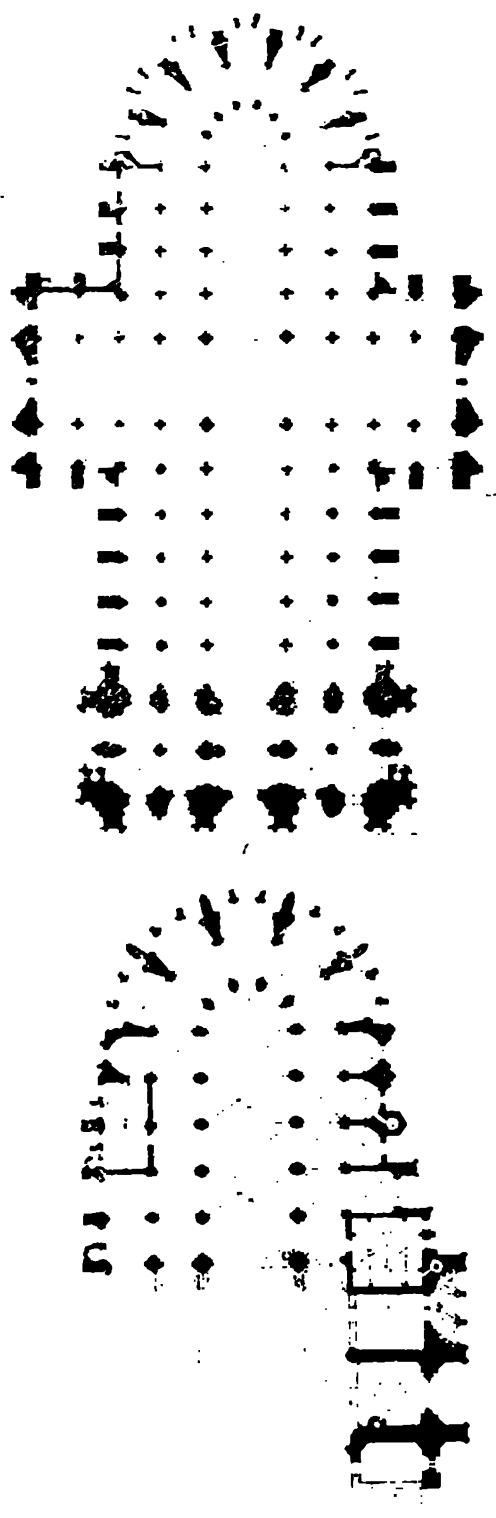
of Cologne. 4. Church of St. Stephen at Vienna. 5. Cathedral of Antwerp.



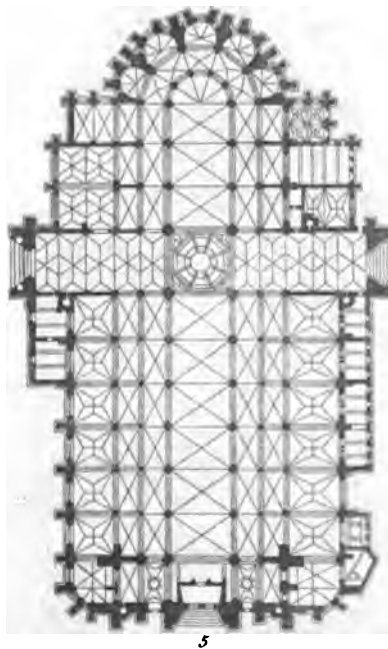
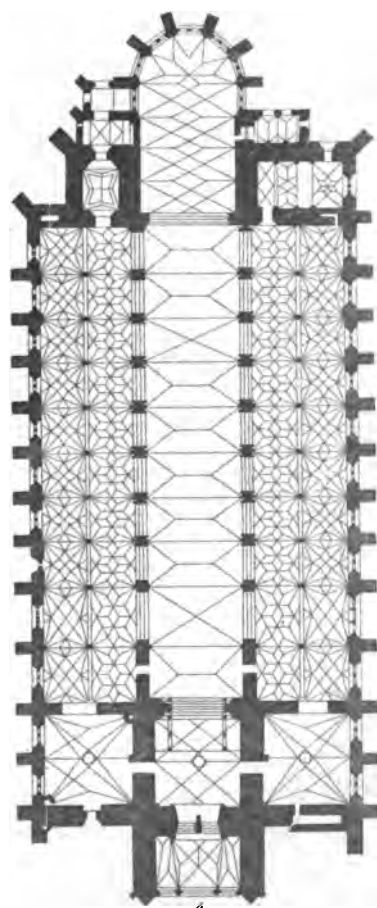
11

11





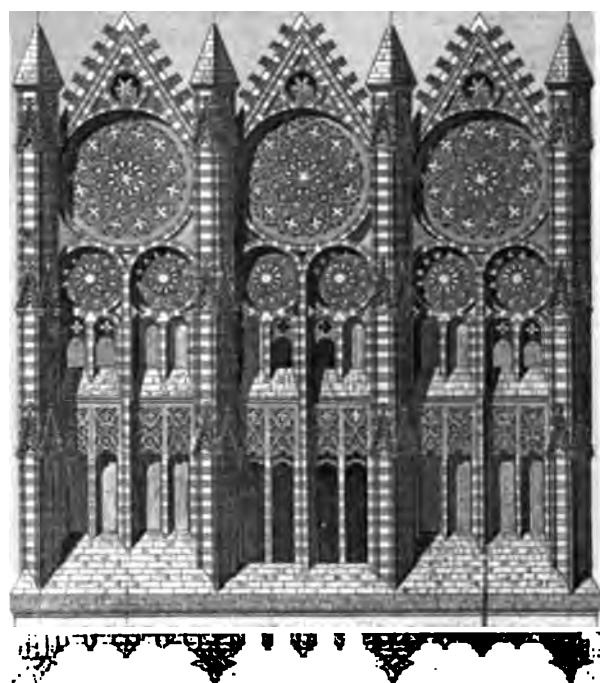
1. Plan of the Cathedral of Cologne. 2. Plan of the Cathedral of Prague. 3. Interior of the Cathedral of Cologne.



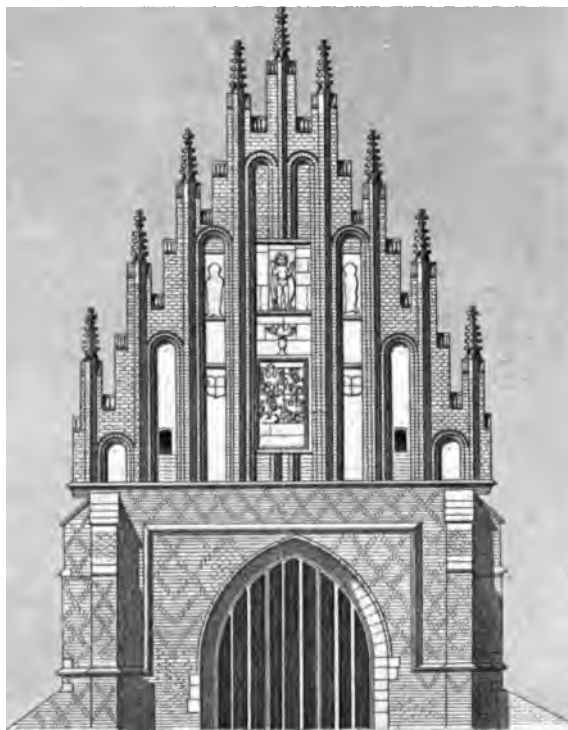
of Prague. 4. Plan of the Minster of Ulm. 5. Plan of the Cathedral of Antwerp.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100





1. Wooden houses on the market-place at Halberstadt. 2. Church of St. Mary at Prenzlau. 3. Town-
6. Gable of the Corpus-Christi Church at Cracow.



inde. 4. Court of the College Jagellon at Cracow. 5. Gable of the Catherine Church at Brandenburg.

1

2

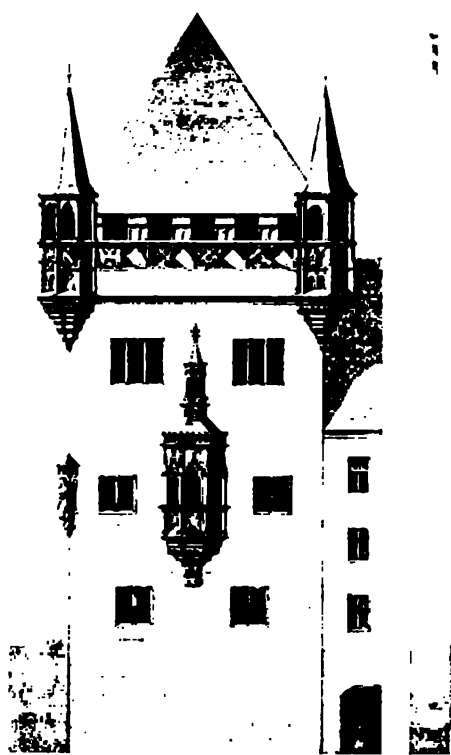
3

4



GERMAN.

GOTHIC



1. Schlösslel House (Nassauerhaus) at Nuremberg. 2. Façade of the dwelling of the grand-master
5. Town-hall of Louvain. 6. Town-hall of Breslau. 7. Town-hall of Oudenarde.



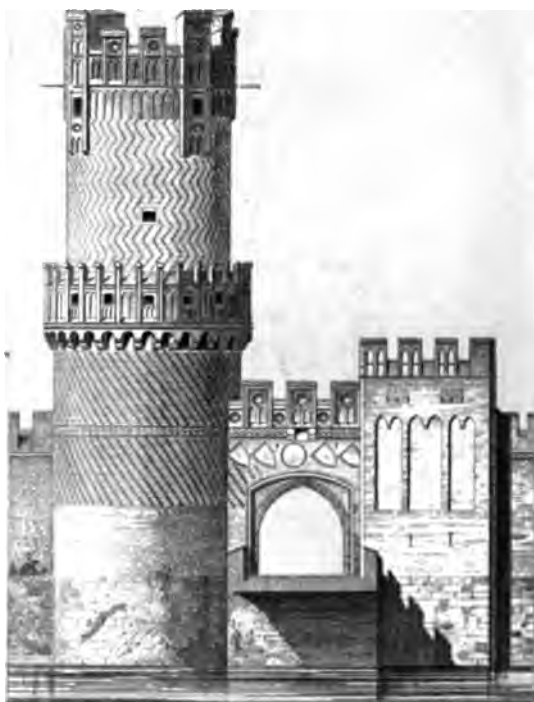


: Order in the castle at Marienburg. 3. Stone house at Frankfort-on-the-Main. 4. Town-hall of Münster.

1

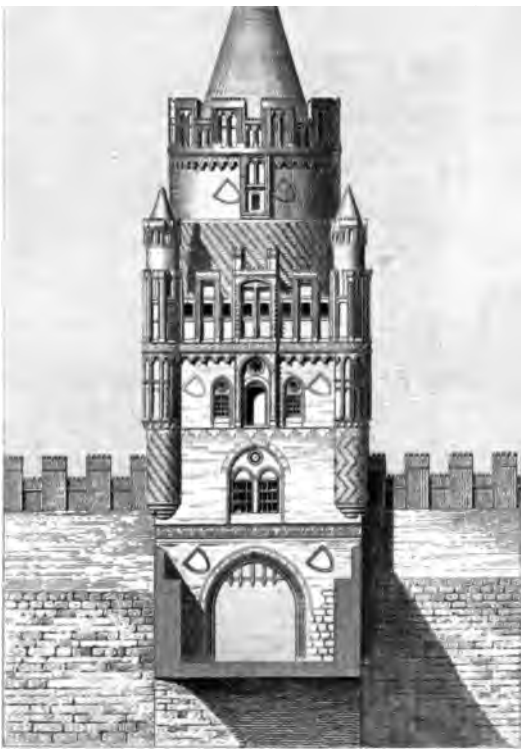
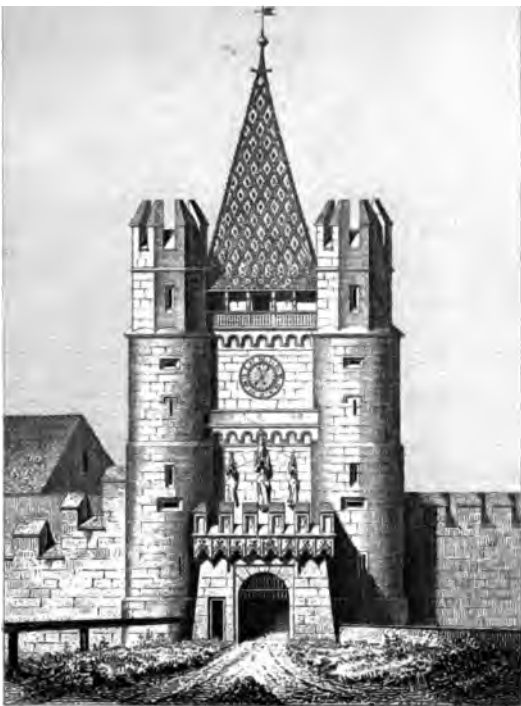
1





1. Old city-bridge gate over the Moldau at Prague. 2. St. Paul's Gate / Transylvania.

3. Neustadt at Basle.



ermünde, Saxony. 4. Uenglinger Gate at Stendal. 5. Florian Gate at Cracow. 6. Castle Vajda-Hunyad in



FRENCH.



1. Palais de Justice at Rouen. 2. House of Jacques Cœur at Bourges.
 the Hôtel de la Tremouille at Paris. 8. Hall at Eltham, England.

11

12

13

14

15

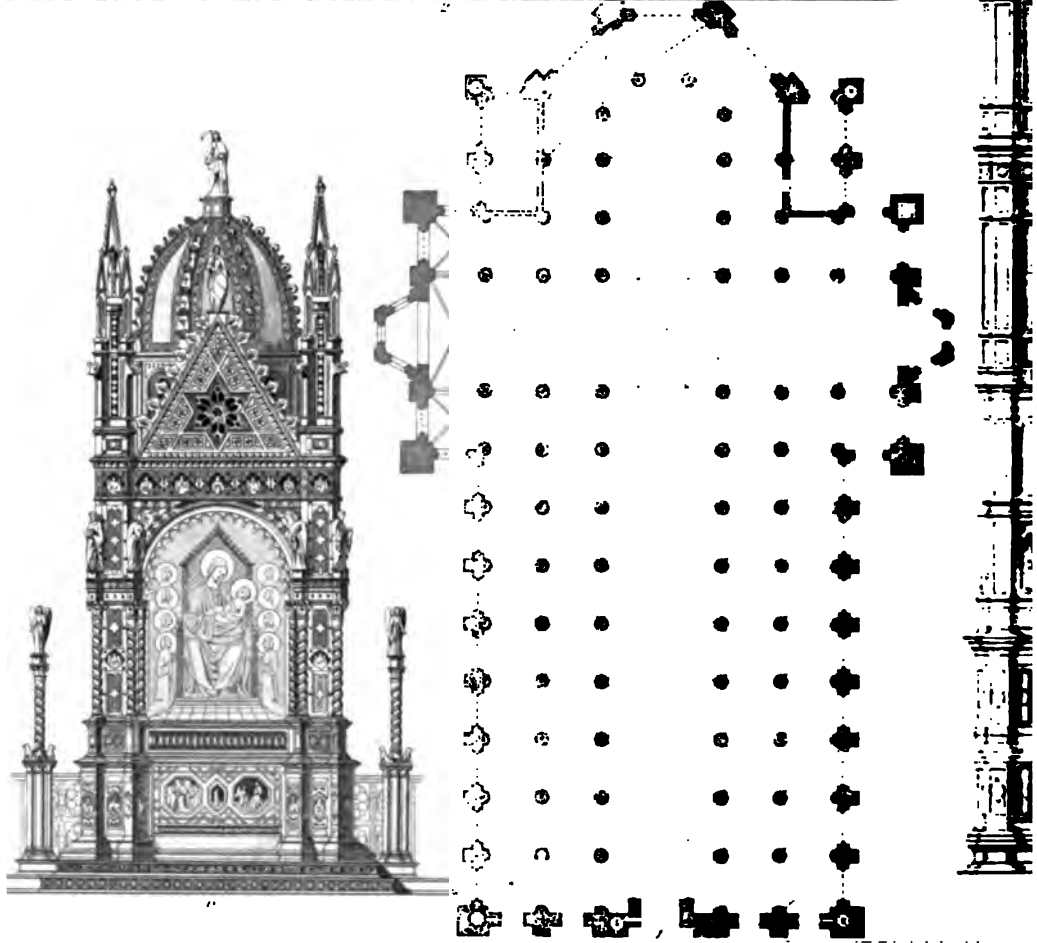
16

17

18

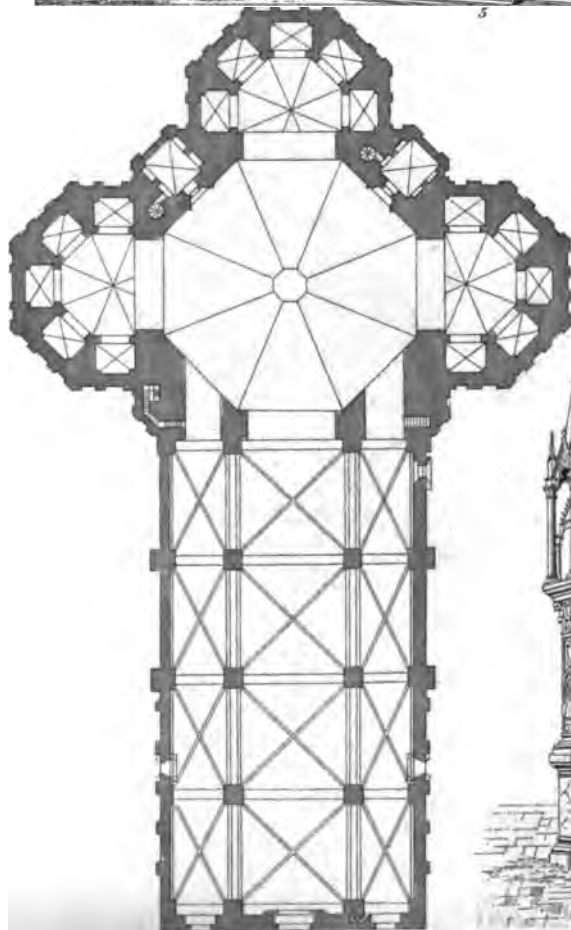
19





1. Plan of the Cathedral of Milan. 2. Choir of the Cathedral of Milan. 3. Plan of the Cathedral of Florence. 7. Scaliger Monument at Verona.

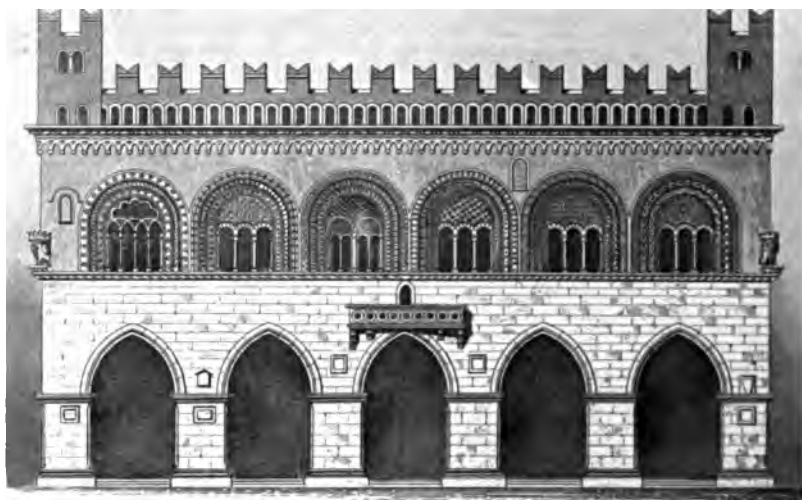




spanile of the Cathedral of Florence. 5. Cathedral of Orvieto. 6. Altar in the Church of Or San Michele at







2

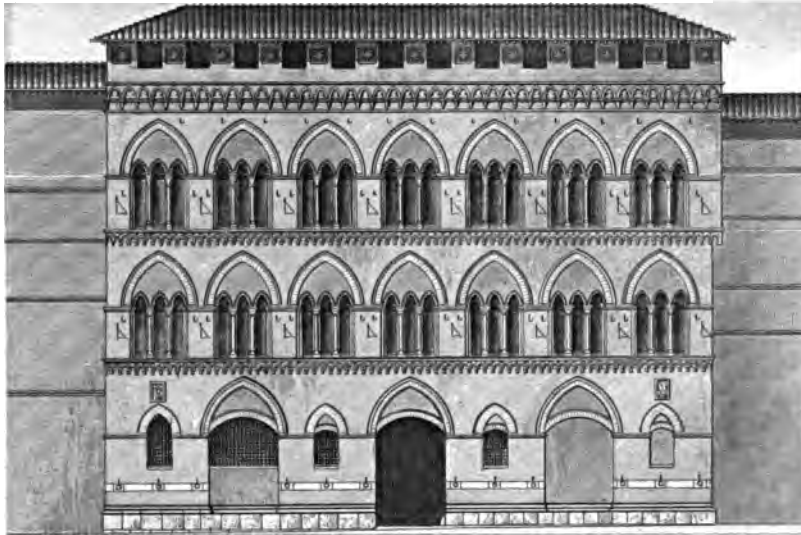


11



12

1. Palazzo Vecchio at Florence. 2. Palazzo Comunale at Piacenza. 3. Palazzo Buonsignora at Siena. 4. Palazzo Vecchio at Florence. 5. Palazzo Vecchio at Florence. 6. Palazzo Vecchio at Florence. 7. Capital from the Palazzo Bernardo at Venice. 8-10. Capital from the Palazzo Bernardo at Venice. 11, 12. Capital from the Palazzo Bernardo at Venice.



3



11



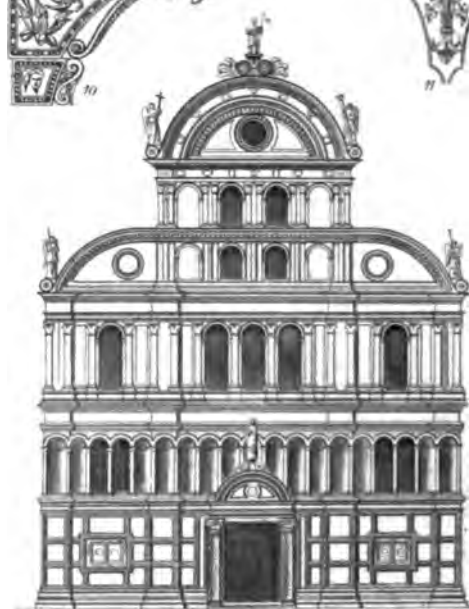
10



12

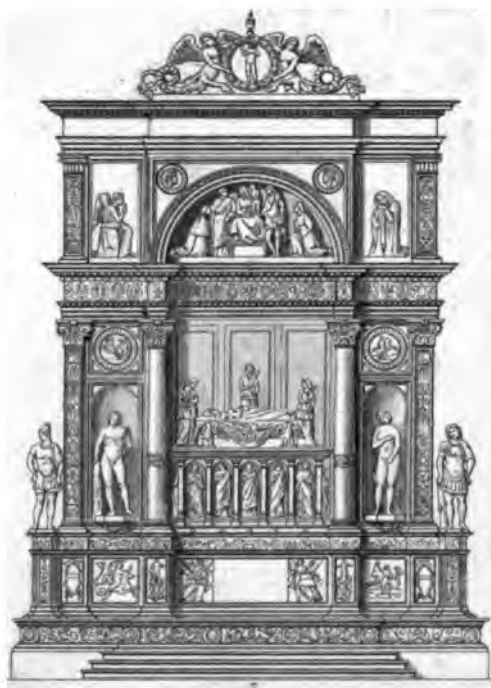
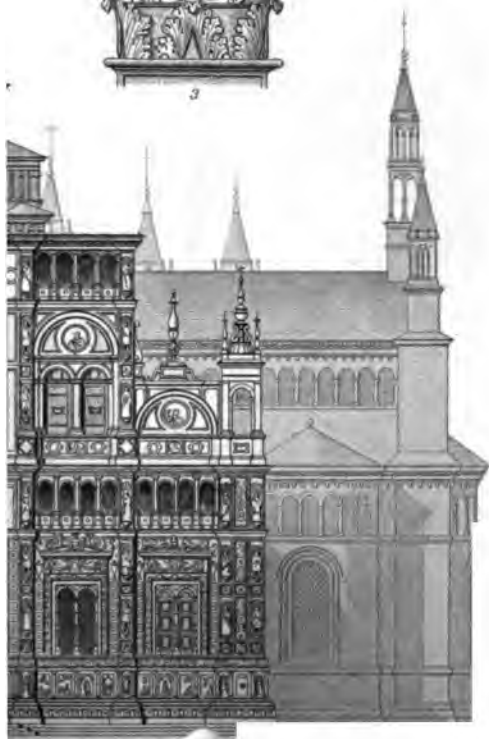
vanelli at Venice. 5. Palazzo Ducale (Doge's Palace) at Venice. 6. Court of the Casa de Audiencia at Trent.





1. Façade of the Certosa di Pavia. 2, 3. Capitals of the Certosa. 4. Vendramin at Venice. 5. Arcade of the small court of the Certosa. 6. in the Church of San Matteo, -qua Minerva at Rome.

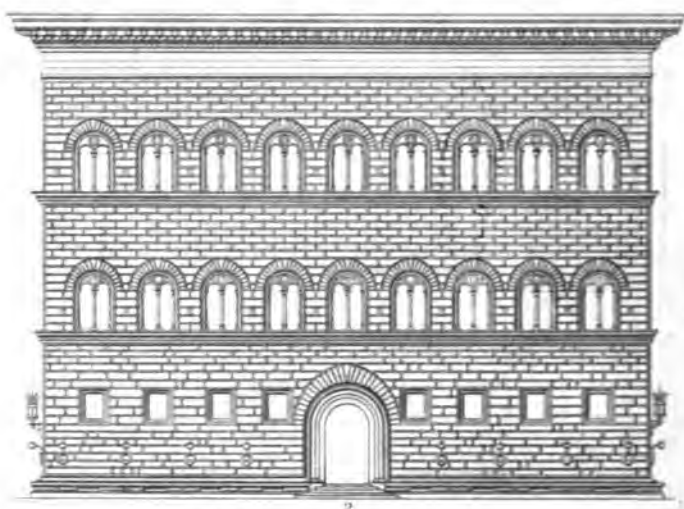
aria della Sal.
- fra Firenze



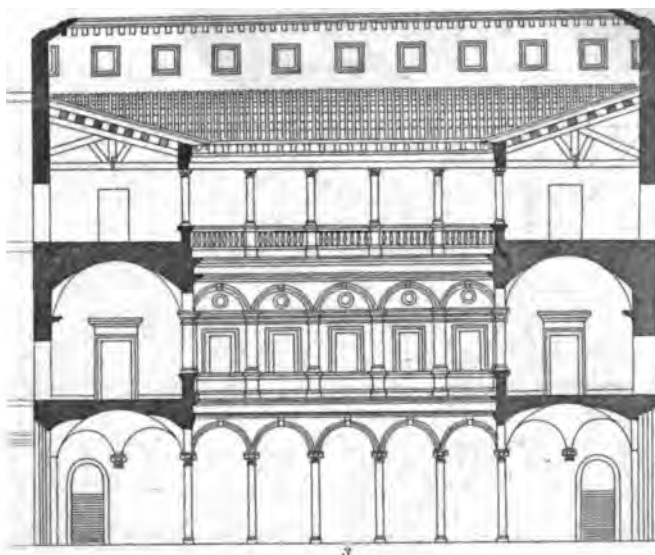
Church of the Redentor
a chimney from the

2. 6. Church of S. Zaccaria at Venice. 7. Tomb of the Doge Andrea
11. Escutcheon from the monument of Francesco Tornabuoni





1. Cupola of the Duomo at Florence. 2. Façade of the Palazzo Strozzi at Florence. 3. Cross-section of the courtyard of the Palazzo Strozzi at Florence.



3. Palazzo Strozzi. 4. Court of the Palazzo Sauli at Genoa. 5. Court of the Palazzo Borghese at Rome.

||
||
||
||

||

||

|||

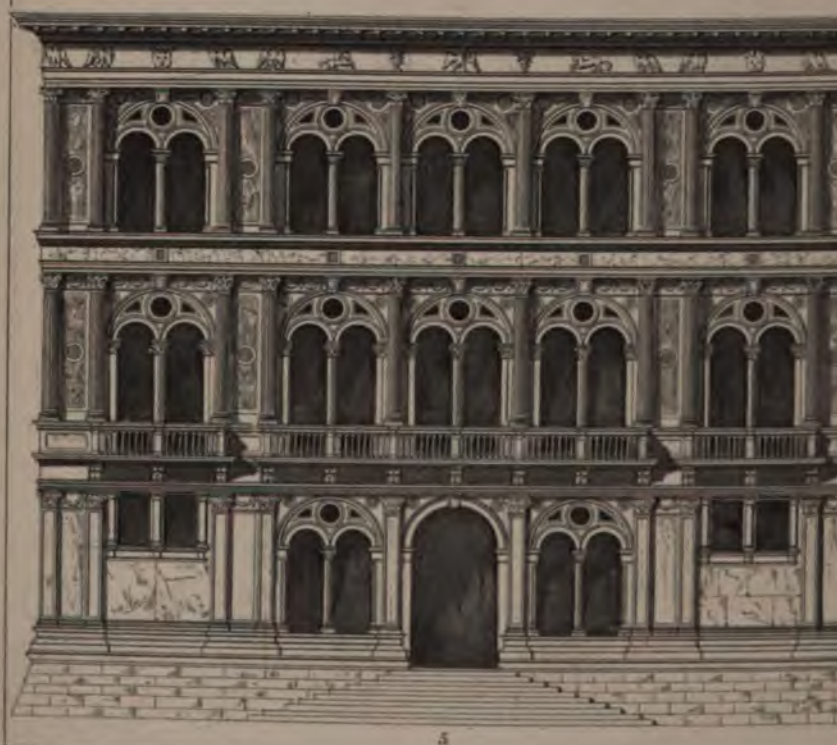
|||



ITALIAN.



1



2

1. Church of Sta. Maria delle Grazie at Milan. 2. Staircase in the court of the Pesaro at Venice (Longhena).

11

11

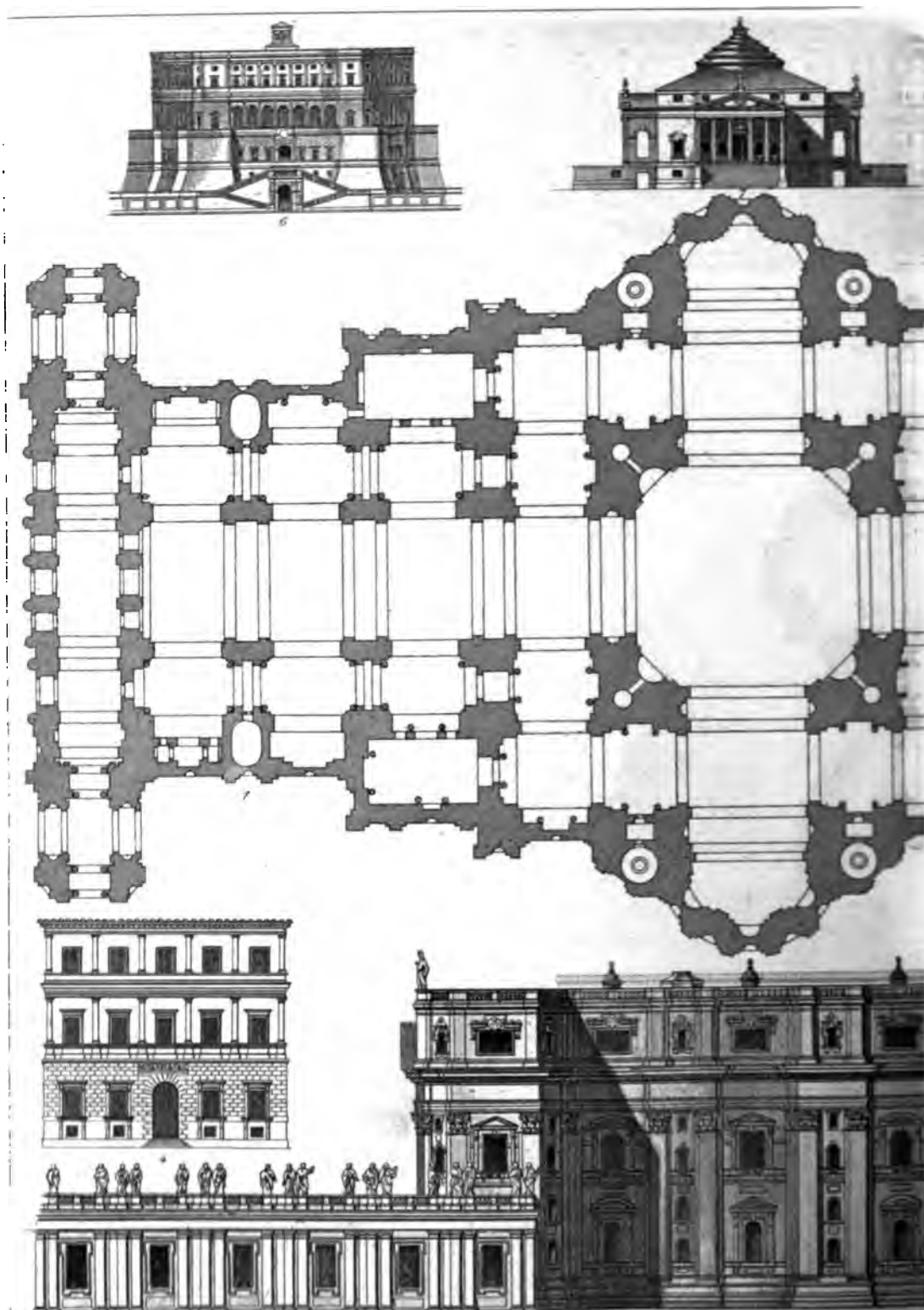
11

11

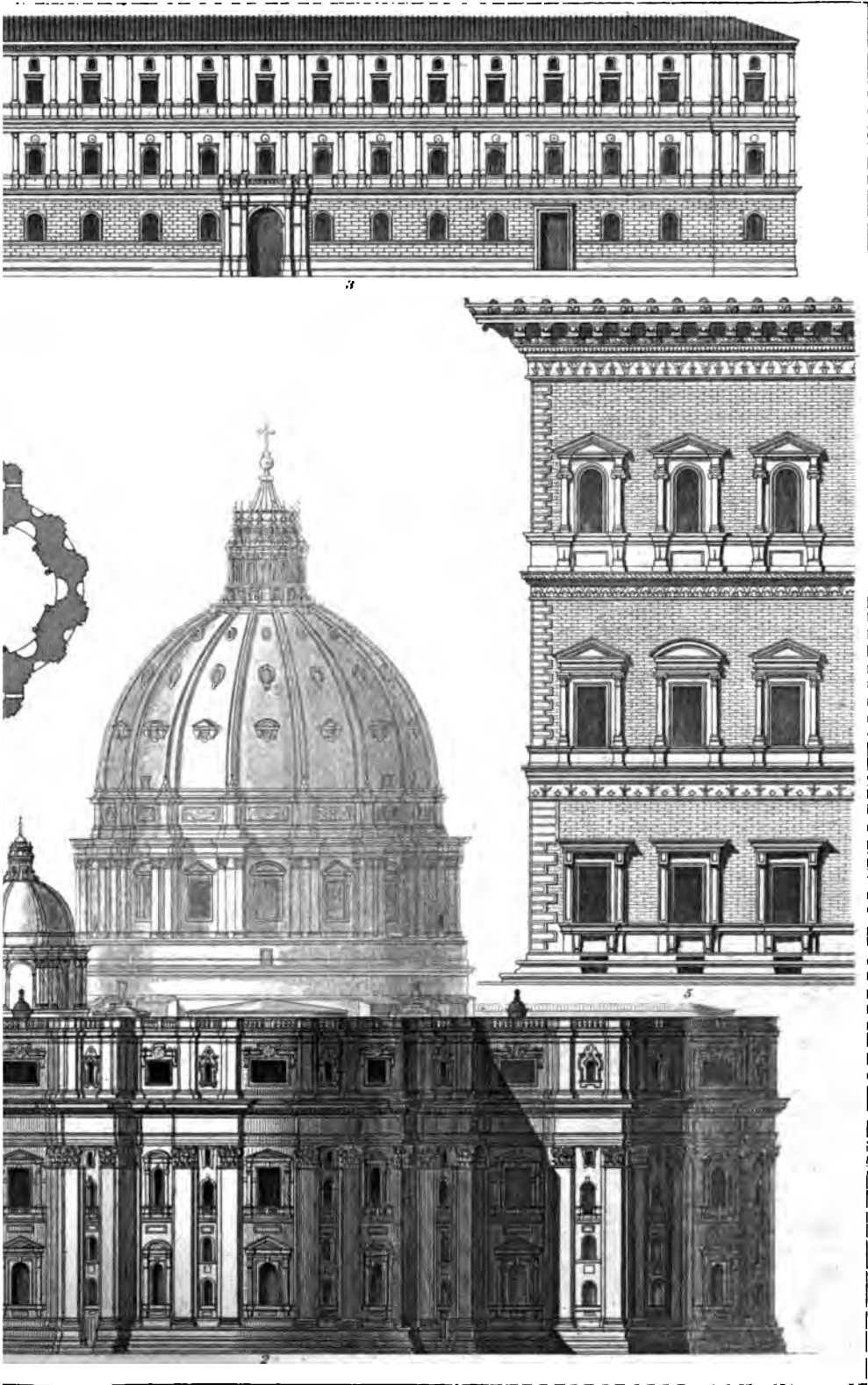
11

11



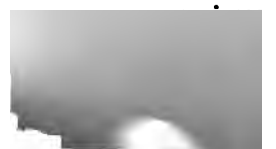


1. Plan of the Church of St. Peter at Rome. 2. Church of San Giovanni in Laterano (Sangallo and Michelangelo). 6. Castle of Caprarolo, between 1500 and 1510 (Palladio).



ante).

Place at Rome (Peruzzi). 5. Section of the façade of the Palazzo Farnese at Rome





FRENCH.



1. Château Madrid in the Bois de Boulogne, near Paris. 2. France. 6. Stairs in the Château of Blois, France. 7. Château from Fontainebleau. 12. Capital from the House of Francis I.

11

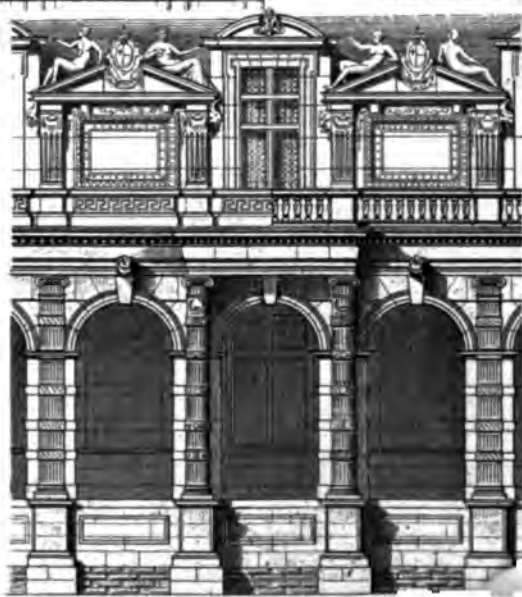
12

13

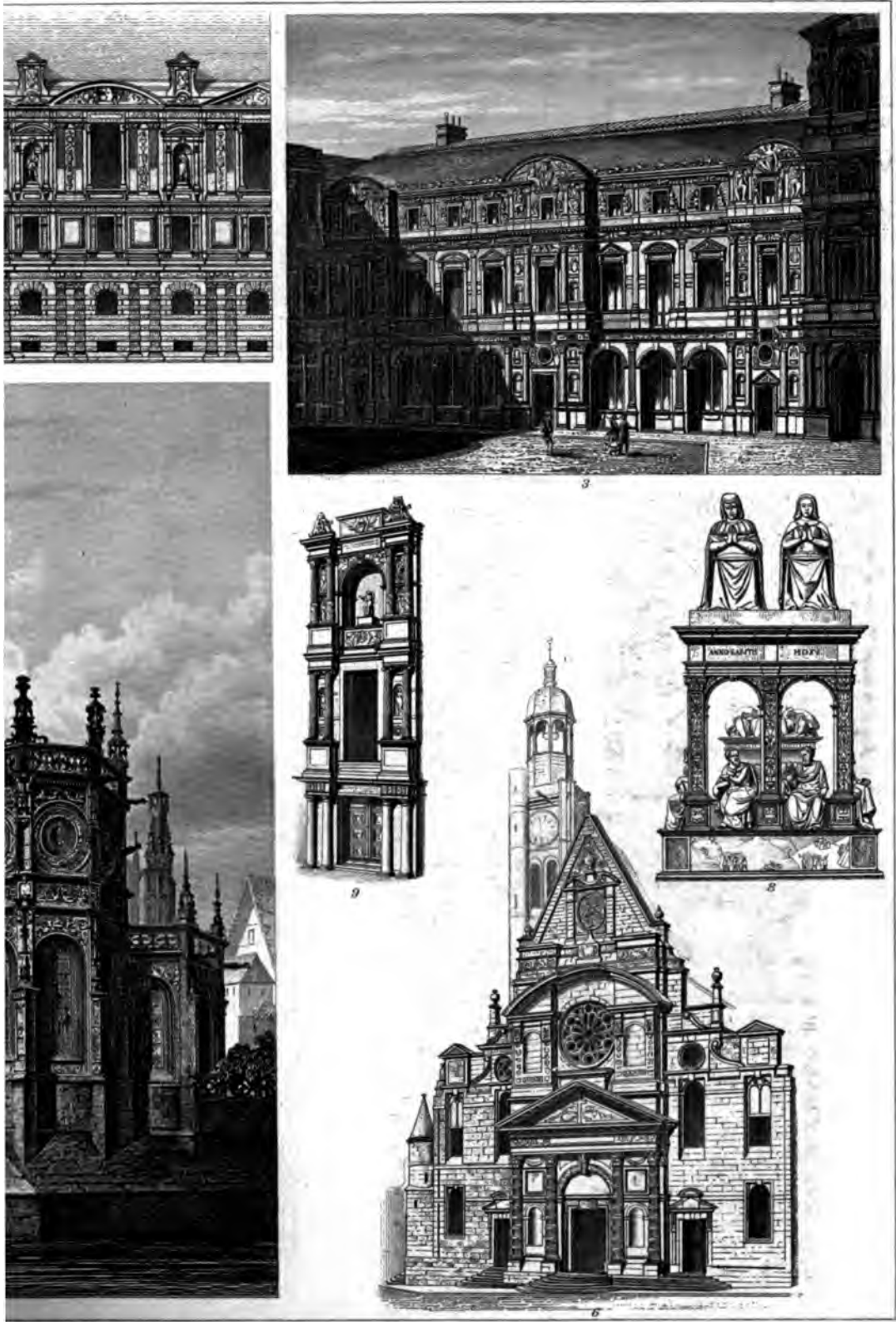
14

15





1. Choir of the Church of St. Peter at Caudebec-lès-Elbeuf. 6. Church of St. Étienne du Mont at Paris. 10. French pillar (De l'Orme).



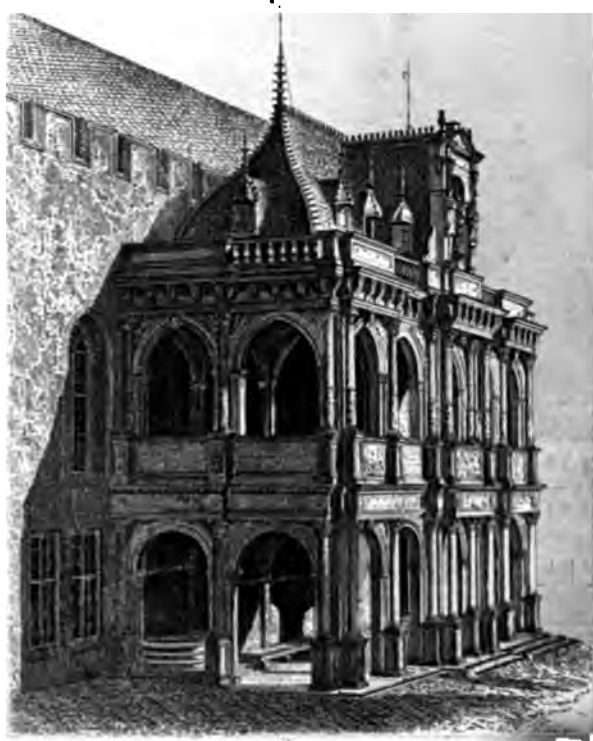
Gallery of Henry IV. in the Louvre. 5. Section of the garden-façade of the Tuileries at Paris (De XII. at Paris. 9. Entrance to the Château of Anet, now at Paris in the Palais des Beaux-Arts.



•

E





1. Knights' House at Heidelberg 2. Carriage

(public hall) at B



See to the Town-hall of Cologne. 5. Town-hall of Bremen. 6. Town-hall of Schweinfurt.

11

12

13

14

15



For the purpose of this study, the following questions were asked:

GERMAN.

RENAISSANCE



1. Court of the Elector at Nuremberg. 2. Catholic Church of St. Charles in Vienna. 3. Palace of the Elector at Nuremberg. 4. Palace of the Elector at Nuremberg.



3



7



6

Swinger at Dresden.

place (Hofburg) at Vienna. 6, 7. Front and rear elevation of the Palace of Prince

11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	



MODERN RENAISS



1. Church of the Église des Jacobins in Paris. 2. Church of the Church of St Paul, London. 3. Church of St Isidore.

...section of the

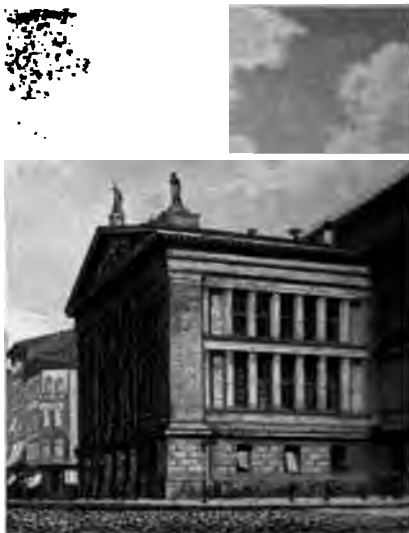


Church of Ste. Geneviève at Paris.

Elevation, of the dome of the Church of Ste. Geneviève (Panthéon) at



MODERN RENAISS



1. Church of Ste. Madeleine at Paris. 2. Interior of the Church of Ste. Madeleine. 3. Vendôme Column at Paris. 4. "Walhalla," near Ratisbon.

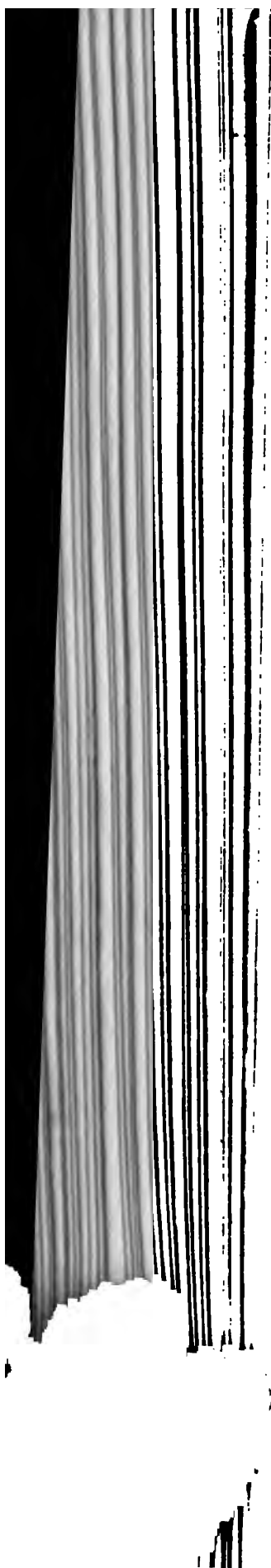


de Triomphe de l'Étoile, Paris. 5. Brandenburg Gate, Berlin. 6. Royal Theatre of Berlin. 7. Glyptothek



PART III.

MODERN ARCHITECTURE.



PART III.

MODERN ARCHITECTURE.

I. EUROPEAN ARCHITECTURE.

WHILE the Brandenburg Gate was building, the storm which was the necessary result of the high tension of the eighteenth century burst in Paris. The French Revolution had overturned a world, and desired to set up a new one. The Republic linked itself to the ancient world, and from this Republic, which copied the Roman, there sprung the new Roman Empire of Napoleon I., which found its expression in a strict adoption of the architectural forms of the first Roman Empire. It was the school of Durand which adopted these forms and spread them beyond France wherever Napoleon's power was felt.

Church of La Madeleine.—A characteristic work of the period is the Madeleine (*pl.* 49, *figs.* 1, 2). The present magnificent structure was begun in 1764. The work was several times discontinued, and the structure was finally completed (1804–1842) according to Vignon's plans as a Temple of Fame. Externally it is a Corinthian peripteros, while internally it follows the system of the Roman baths.

Triumphal Arches.—It seemed probable to the architects that very soon the idea of a temple would be abandoned and a Christian church take its place, and they therefore strove to develop true architectural forms. In 1805, Percier and Fontaine erected on the Place du Carrousel a triumphal arch which was a copy of that of Constantine, and in 1806 the already-mentioned Chalgrin, who was active during the preceding period, commenced the famous Arc de l'Étoile (*fig.* 4). This was continued until 1814, then again between 1823 and 1828, and was finally finished (1832–1836) by Blouet.

The Vendôme Column (*fig.* 3) was erected by Napoleon (1806–1810) in commemoration of the victory of Austerlitz; it occupied the site of the equestrian statue of Louis XIV. which had been destroyed at the Revolution. The design is attributed to Lepère. At the summit stood a statue of the emperor in the guise of a triumphant Roman; this was taken down in 1814. Louis Philippe replaced it with a figure of the emperor in the costume of his period; Napoleon III. set up the triumphant Roman again, and in 1871 the entire work was overthrown by the Communists, but has since been re-erected. After mention of the Paris Bourse (1808–1826) as a work of that period, we will follow the spread of the style in other lands.

The Bank of England (1788) showed an approach to that classicism which in 1808 was expressed by Robert Smirke in his Covent Garden Theatre.¹

Italy followed the example of France the more readily since politically it was under French influence, and since it had before its eyes the monuments of the Roman Empire, though in a much worse state of preservation than those of the fifteenth century.

Weinbrenner.—For purposes of study Germany sent its architects to Paris, whence they accompanied young Frenchmen to Rome; yet it was not until the yoke of French tutelage had been thrown off that the German architect found an opportunity to display greater activity in building. Friederich Weinbrenner found the first great task in his native city, Carlsruhe, where previous to about the end of the second decade he executed a series of partially-connected buildings. The architectural forms are so extremely rude that they can scarcely be called forms, but he knew how to make the *ensemble* magnificent, and the plan of the whole quarter, from the now destroyed Ettlinger Gate (a barbaric copy of the Propylæa), through streets of varied width broken up with squares and leading up to the castle, may serve as an example of an artistically-laid-out city. The principal structures, notwithstanding the rude details and the severe architecture, have a dignified and imposing appearance as a whole. Weinbrenner was succeeded by others, as Moller at Darmstadt, Zanth at Stuttgart, etc.

Church of St. Isaac.—Classical art also found its way into Russia, and produced in St. Petersburg a series of buildings, among which the Church of St. Isaac (*pl.* 48, *fig.* 7), which again brought into play the magnificent cupola of the previous period, must be considered the most important. It was begun in 1819 by the Frenchman Montferrand, but was finished considerably later. The Cathedral of Gran, in Hungary, is also an immense domed building begun early in this century, but finished much later. It is less magnificent than St. Isaac's, and impresses rather by its massiveness than by its artistic qualities. Other works in Hungary in the antique manner, as the museum at Pesth, are similar in these respects.

St. Pancras Church.—But there was now a desire for greater artistic delicacy of forms, and this desire was chiefly satisfied by the opening of the sources of classical art, the monuments of Greece. Toward the close of the last century the English devoted themselves to the investigation of these sources and published the results, and it was not long before they had produced imitations of these classical structures. In 1819 a copy of the Erechtheion was constructed in London as St. Pancras Church, but the row of caryatides was repeated on the other side for the sake of symmetry.

¹ Sir John Soane was the architect. Sir Robert Smirke's British Museum is more worthy of mention than Covent Garden Theatre, which is now replaced by the grander classic structure of E. M. Barry. The British Museum is really a noble piece of classic architecture, having in front a centre and two wings, with colonnades. But its classicality is less; it could not be added to, and some of the collections have been removed.



Schinkel.—The best interpreter of this return to the most refined period of the classical style in Germany was the ingenious Schinkel. By the execution in Berlin of the royal guard-house (1818), of the artistically-arranged theatre (1821; *pl.* 49, *fig.* 6), and of the magnificent Ionic colonnades of the old museum (1828)—all works of genuine classic and artistic delicacy—he became the foremost of Prussian architects, and exercised the greatest influence throughout the kingdom through the eminent school which he founded. Yet he not only established the purest classical school, but worked also in other directions. Along with Schinkel in Northern Germany, among several others, worked Karl Ottmer of Brunswick, who in 1822 built the Königstädtische Theatre, and in 1827 the Singakademie, both at Berlin. His principal building was the grand-ducal palace at Brunswick (1830–1836).

Von Klenze.—In Southern Germany, Leo von Klenze, though not equal to Schinkel in refinement of conception or nobility of effect, more nearly approached him than any other of his contemporaries. Of all the architects whom King Ludwig I. employed for his buildings, Von Klenze displayed most ideality. Among his works are the Glyptothek at Munich, commenced by Ludwig while he was yet crown-prince (*fig.* 7); the Walhalla at Ratisbon, begun in 1830 (*fig.* 8); the Bavarian Ruhmes-halle, built in later decades and enclosing Schwanthaler's colossal statue of Bavaria (*pl.* 50, *fig.* 3); the Hall of Liberty at Kehlheim, and the Propylæa at Munich (*pl.* 51, *fig.* 3).

But Grecian style in its purity, even more than in the forms it assumed under the Roman Empire, appears but a foreign and borrowed garment for modern edifices. While, therefore, this style continued to be used in its purity for several decades and at last found an ingenious interpreter in Hansen, other tendencies very soon manifested themselves. While some considered the Greek style the ideal of form and turned toward it all their conscious thoughts, others at the same period sought their ideal in another direction, and recommended and selected the styles of past periods other than Grecian as a model for the future.

Mediæval Tendencies.—In architecture, as in other departments of culture, there arose a series of romanticists who asserted that the works of our time should be modelled on the great works of the Middle Ages. These based their pretensions partly on national principles, and claimed that since Germany had broken the French yoke, and as a result of the war of liberation had made herself politically independent of France, she ought also to stand upon her own base in art-matters and work out a new national style from the great structures of her own past. But cosmopolitanism had already so permeated the whole of the Western nations that national isolation was no longer possible, and only such tendencies of thought as included all nations could long subsist. In France and in England also arose romanticists who in the name of their nationality advocated the return to mediævalism as a national matter in their respec-

the countries

Romanesque Revival.—Others advocated a return to mediæval forms in the name of Christianity and of the Church, and turned to some extent toward Italy, whose mediæval edifices were set forth as models. The Gothic cathedrals of Italy were studied together with those of old Christian and Romanesque times. St. Mark's at Venice naturally made a powerful impression. Men saw patterns and directions everywhere, each one being considered by a certain group of artists as exclusively authorized and worthy of imitation, without, however, actually seizing its characteristics rightly, as all attempts to work out independence in this direction proved.

Church of St. Michael.—To the attempt to build in the Byzantine style we owe St. Michael's at Munich, erected by Leo von Klenze between 1826 and 1837. The interior is decorated with costly marbles and paintings on a gold ground, and presents a most solemn and dignified appearance (*pl.* 50, *fig.* 2), though the exterior is neither Byzantine nor artistic.

Heinrich Hübsch of Carlsruhe, who from the third decade of the century sought to reintroduce the Romanesque style, raised in 1827 the question, "In what style shall we build?" and answered it with the recommendation to use the style he had chosen. De Lassaulx, who also followed this direction, built many churches upon the Rhine in the pseudo-Romanesque style, while Hübsch built a series of such in Baden. The *Bois-sérées* published pictorial views of the Rhenish architectural monuments, and thus gave architects the opportunity to learn the forms of that style.

Munich School.—Gärtner also followed this direction, and, like Hübsch at Carlsruhe, formed at Munich a Romanesque school. In the Ludwigs-kirche, commenced in 1829, but not entirely completed until 1842, he found the opportunity to execute a grand edifice in this style, though leaning rather toward Italy than toward Germany (*pl.* 50, *fig.* 1).

The Roman basilicas also captivated Ludwig I. both by their spaciousness and by the splendor of their decoration, and he had one (St. Boniface) built at Munich by Ziebland. The ceiling is of metal in imitation of wood. The erection occupied from 1835 to 1840, and the decoration of the interior took four years more. As far as architectural forms are regarded, those of the Romanesque prevailed in this building more than those of the period which gave the model for the general arrangement.

Secular Structures.—Gärtner and his pupils built a series of secular public buildings and dwellings which might be called Romanesque—or, as it was then named, "Byzantine"—but which were, in fact, structures arranged after the system of the soberest direction taken by the eighteenth century, with decorations which consisted of pilasters, inscriptions, and curved friezes enclosing single plain round-arched windows, usually in the manner of the Venetian palaces, grouped in the middle of the façade or in the wings. At the same time, the question as to the exclusive "right of the round arch" in our time was thoroughly discussed. The more the publications of Romanesque structures multiplied,

the less really Romanesque were the works of either the Munich or the Carlsruhe school, even after men like Ludwig Lange at Munich and Eisenlohr at Carlsruhe, and others, had followed Gärtner and Hübsch. Naturally, the Romanesque of the eleventh to the thirteenth century could afford very few models for secular structures, and these did not agree with the requirements of our modes of life, which steadfastly continued to be those which had been developed under the influence of the Renaissance, especially during its latest phase. The whole of the so-called Byzantine direction of Munich may be considered as a queue bound with a fillet which differs from the antique and is not always the most attractive.

Though these structures cannot be called Romanesque, it cannot be said that they are all inartistic, as are many of Gärtner's structures in the Ludwig's-Strasse. The most important of his buildings, the library, unites round-arch architecture with that of the first bloom of the Florentine Renaissance, and attains thereby a somewhat imposing earnestness and monumentality. The *ensemble* is thoroughly Gärtnerian-Byzantine, yet nevertheless produces in the staircase, where this is most apparent, a really magnificent effect. The copy which Gärtner in the so-called Feldherrenhalle (Hall of the Generals) made of the Loggia dei Lanzi is entirely inartistic when compared with its model. But others did better; thus, Lange, and also Bürklein, in his railway-stations and Schiesshaus, and the latter, together with Metzger, Kreuter, etc., in various private houses.

New Pinakothek.—A characteristic but not exactly beautiful work is the new Pinakothek at Munich, built by Voit (*pl.* 51, *fig.* 2). This structure plainly shows on its exterior that it was erected exclusively for a picture-gallery.

Carlsruhe School.—Particular importance attaches to the Carlsruhe school, since Hübsch advocated as a fundamental essential the visibility both of the materials and of the construction required by them, while, through the influence of the eighteenth century, this idea had completely disappeared. The entire masonry had been executed in the crudest manner and then concealed by plaster or stucco, and stone had been used only where durability seemed to render it indispensable. Wood was frequently used instead of stone, particularly for the entablatures of the colonnades, for cornices, and for parts which could by a coat of paint or plaster be made to enter into the circle of forms without being recognized, since forms, and not materials or construction, were cared for.

Though the consideration of the magnificent works of the ancients had sharpened the æsthetic sense, so that mankind desired to have architectural forms executed in beautiful and durable materials, this had not yet become a fundamental principle of the schools of the nineteenth century. Romanesque and Greek forms alike were plastered, and the conception that not luxury, but fundamental tectonic necessities, demanded that brick and wood should have their own distinct characteristic con-

struction unlike that of stone, and that each should in its own characteristic forms, became a very fruitful one. The idea appeared in isolated instances elsewhere, it could attain importance only if, as was done by Hübsch, it was made the principle of an entire school. By this Hübsch has done more for the development of Architecture than by agitating the question particularly after Eisenlohr had even more successfully than him, in an entire series of large and small structures what architecture is possessed by genuine forms, what a picturesque and pleasing and what variety of combination a characteristic disposition of modes of construction makes possible, whether the proportions be large or small.

Revival of Gothic.—Together with the taste for the Roman contemporary movement took place in favor of the Gothic which had been praised as the national German style. *Götz von Berlichingen* and *Jungfrau von Orléans*, and likewise the knightly plays of the romanticists; the stage had developed for such plays a Gothic met with popular favor; and so it came about that the romanticists for a reintroduction of this style awakened interest in the hearts of the German people. Even men like Schinkel took for it a lively interest, and, as the latter had made designs for decorations in the Gothic, he was also one of the first who built buildings in that style. The monument on the Kreuzberg commemorating the war of liberation, and the Werder Church (1825), have both been completed. It is, indeed, not the Gothic of the Middle Ages, but only a theatrical Gothic seen in the spectacles. By Grecized details the master sought to give the refinement he missed in the original works, with which he had no intimate acquaintance. Although the Werder Church is, therefore, not Gothic, it surpasses in artistic importance all other Gothic of the period, as Schinkel surpassed his contemporaries in the latter part of the century.

Heideloff.—The enumeration of all the pseudo-Gothic buildings of the time may be spared to us, that we may proceed to a master who was active in the style without having deeply penetrated its interior. Heideloff of Nuremberg, originally a scene-painter, greatly interested himself in the preservation of the Gothic structures of his city, so that, although injured, however, under the pretext of restoration. He gathered around him churches in various parts of Germany, and gathered around him a number of pupils who either did little that was artistic or worked in the style, so that only a few developed into able architects. But it was his interesting works that had an extensive circulation that Heide-
most to obtain wide acceptance for the Gothic.

King Ludwig I of Bavaria also encouraged this taste for the Gothic church (begun in 1831) in the *Heideloff* style.

afterward the best example of the revived Gothic, though it is far removed from a correct archæological conception. In general, the many Gothic structures which were executed prior to the sixth decade were as little Gothic as the so-called "Romanesque" structures were Romanesque, even though theorists like Hofstadt taught the round of art and propriety.

Zwirner.—A veritable approach to the ancient Gothic was not made in Germany until the resumed construction of the cathedral at Cologne by Zwirner, who, indeed, in his own masterpiece, St. Apollinaris at Remagen, did not prove himself a Gothic architect, but who saw a school forming around him from which proceeded capable masters concerning whose works, which are still in progress, and which belong even to the nearest future, we shall hereafter speak. Though all these attempts—which, in consequence of the zealous efforts of Ludwig I., had Munich for their centre—constrain us to the recognition of earnest endeavor, some have an oppressive effect, particularly since neither the Romanesque nor the Gothic rises to really worthy achievement in a truly artistic sense.

The king had more good fortune in equalling his models in those edifices of Munich which he commissioned Klenze to execute in the style of the earlier Italian Renaissance, as the Königsbau of the capital, which was finished in 1835, the Saalbau, with its massive façade toward the court gardens, and the old Pinakothek (*pl.* 51, *fig.* 1), finished in 1836.

Revived Roman.—The Roman style was also revived. In 1823, Klenze rebuilt the theatre according to the old plan of Fischer, and the Protestant church in front of the Karlsthor was rebuilt (1827–1833) in a style which may be called Roman if it is to have a name. In the Gate of Victory which King Ludwig caused to be erected by Gärtner at the end of the street named after the former the Roman triumphal arches are again copied, and the great obelisk which was set up in 1833 may also be deemed Roman.

It thus came about that a definite style no longer generally existed, and, since many considered their directions to be the only correct ones, their styles to be the styles of the future, there were necessarily many reciprocal influences. Thus the employment by Schinkel himself in his Academy of Architecture, built in 1835, of a characteristic brick architecture executed with delicate detail and most refined ornament—which, indeed, echoes many structures of the Renaissance period, but which shows more tendency toward a new independent style—may be attributed quite as much to the influence of the various contemporaneous currents as to the knowledge of the value of forms which are characteristic because they are evolved from the materials themselves.

Schinkel School.—Such tendencies developed more and more in Berlin after a new era had been opened for ideal efforts through the desire of Frederick William IV. to introduce a romantic trait into classical art. It was chiefly to Schinkel's pupils and followers that the king assigned most of the tasks which required something more than new combinations of the attempt at more picturesque grouping, and finally

the demands of life, brought new elements partly derived from old periods, but partly quite new. Thus, Schinkel himself, even where he did not wish the Gothic style, as in the Werder Church, adopted many romantic details.

Berlin Style.—But, above all, Schinkel and his followers, whenever they erected their structures in other styles, introduced the Hellenic refinement which Schinkel in his Architecture knew how to impress upon brick-constructive details so intermingled that it is often difficult to tell whether or some other style formed the groundwork of the set of any definite building; so that we may properly speak of the Berlin style, since until after 1860 all these structures had something which was not exhibited by any other school. We may mention Schinkel's magnificent domed church at Potsdam, and a number of its suburbs; the buildings of Persius, composed in the style of the Greek idyls; the entire series of palaces and dwelling-houses of Hitzig, and Knoblauch; Stüler's new museum, Hitzig's new opera-house. To the latest, but the best, works of this kind belong the new Leipzig by C. F. Langhans (*pl.* 51, *figs.* 6, 7).

Neither can those buildings for which mediæval exactness was the groundwork deny their relationship to the preceding style. The various churches of Berlin and other parts of Prussia, since the reign of Frederick William IV., have followed the sequence of the preference of Frederick William IV. for the Gothic style, as well as the result of an approach to the Gothic or the Romanesque style. We may mention Soller's St. Michael's, Stüler's St. Mark's (*pl.* 52), and various other churches by the same masters; Adler's church of St. Thomas (*fig.* 11), etc.; and even Strack's church in which the Gothic comes into play with comparative freedom more "Berlinish" than Gothic.

The Prussian provinces show a great number of similar tendencies. This tendency may now be considered as entirely obsolete. On the one hand, the Rhenish mediæval school, essentially through the influence of Adler, has brought about, even in Berlin, a more severe and more consistent mediæval style; while, on the other hand, after Strack and Stüler, particularly the university buildings at Kiel and Rostock, as well as his academy at Pesth, have had a definite inclination toward the Renaissance, this latter style striding from the fifteenth-century Italian phase to the latest and the most modern. It cannot in Berlin be said to belong to the past but to the present. Even the finer rendering of the details of the long since adhered to the Renaissance structures of Berlin of the Schinkel school, is rapidly disappearing to make way for a more archaeologically correct and more vigorous manner.

The Romanesque tendency of Munich and Carlsruhe has also shoots. Semper, who later on was the

lowed it in the Dresden Synagogue; some works at Frankfort, Darmstadt, and Mayence were executed in it; while Baden—where Eisenlohr's railway-stations are really artistically-important and praiseworthy achievements—and Bavaria were filled with more or less good works.

Hanoverian School.—But a special school which was to a certain extent a branch of that of South Germany was formed in Hanover, where the new Rathhaus is one of the older, if not exactly one of the better, works, since the school, especially Haase, soon evolved a fresh and pleasing originality, and in the museum, the military hospital, and finally in the Welfenschloss, attained magnificent results, though, indeed, in the last-named building the attempt at originality goes too far.

Vienna School.—In Vienna the current of the architectural movement of the first half of our century was only slightly ruffled. Some little was accomplished in the pure antique, but in general the baldness of the spiritless "queue" style continued and worked itself gradually into a certain indefinite Renaissance direction which found expression in the edifices of Sprenger and his contemporaries, who were architecturally his dependants. The best works executed in this manner are the Coburg Palace and the Statthalterei (government buildings) of Lower Austria, the last partly formed under the influence of the opposition of artists who, like Förster, Rössner, and Van der Nüll, had been drawn in by the current which swayed Germany. A late production of this manner, already entirely permeated by other influences, is Franz-Joseph's Gate, completed in the sixth decade.

Under the influence of the Romanesque school of Munich arose the opposition which was able after a long suppression to develop a school in Vienna in the middle of the present century. Influenced as this was by the official architectural censorship, it had not been able to demonstrate clearly its principles even in the church built by Rössner in the Jägerzeile, still less to create a genuine artistic work. On the other hand, the Altlerchenfeld Church at Vienna, built by the Swiss architect Johann Georg Müller, a pupil of the Munich Academy during the revolutionary struggles of 1848, is one of the best examples of the pseudo-Romanesque school.

The magnificent new artillery arsenal at Vienna, in which Rössner, Ludwig Förster, Hansen, and the partners Van der Nüll and Siccardsburg took part, belongs also to this Romanesque direction, and is in some parts, as suits the purposes of the buildings, simple without soberness, while in others it rises to a pitch bordering on exaggeration. The most important parts are the Commandantur, by Van der Nüll and Siccardsburg (*pl.* 52, *fig.* 4), and the Museum of Arms, by Hansen (*fig.* 5), in which this master attempted a soaring flight by introducing a series of Moorish elements without reaching that nobility of proportion and grandeur exhibited by his other works. We may mention the Karolinenthal Church at Prague by Rössner, the cathedral, together with the episcopal palace and seminary, at Olomouc, by the same master, and some works of

Hansen, as the church in the Protestant cemetery at Vienna, a few structures in the naval arsenal at Trieste, etc.

Ferstel followed a similar direction in an ingenious manner in the new bank-building at Vienna, which he indeed conceived in the spirit of the earliest Italian Renaissance, but brought in so many mediæval elements that the structure may properly be reckoned among those of the Romanesque mixed style. But it indicates already the transition on one side to the Renaissance and on the other to the archæological mediæval. At the present time this Romanesque direction has been everywhere discontinued; where it became strictly archæological it has blended with the Gothic, elsewhere it has leaned toward the Renaissance, while again it has resolved into that abortive "style of the future" whose only merit is its want of vitality.

"*Old-Christian*" Style.—This entire Romanesque tendency, from its very beginning, expresses a completely free conception which proceeds from the consciousness that its task was to create works, not for the past, but for the precise requirements of the present. This movement, therefore, was not affected by the fact that the historico-artistic researches among the older monuments of Architecture proved more and more that the original Romanesque, even in its membering and ornamentation, was a very different thing from its modern reproduction. This conception, free from slavish imitation, became a watchword that played an essential rôle in the establishment and defence of the theory; so men were satisfied with a mixed style that contained all sorts of elements, and that deviated more and more from the historical basis. Hübsch, one of its oldest advocates, even dropped, in the fifth decade, the designation of Romanesque, and strove to obtain in the entire rendering a nearer approach to the classical Christian—to the style called by him "Old Christian"—and in details to the earlier Italian Renaissance; yet even here the paraphrase must be so free that the spirit of the new period may be clearly distinguished. Yet this mixture, freely conceived, manifested but slight relation to any of the historical styles, and thus could be considered as a style of the present or the future only when an entire great school adopted and fostered it.

Hübsch's structures bear witness to a refined taste for pure and simple grouping of the masses and good proportions, and above all he is careful not to let the *ensemble* be overpowered by the details. Even a systematic mode of treatment verging on bald monotony did not result unfavorably, since it evinces a complete mastery of the subject; but more destructive of value was the want of sentiment for real refinement of detail and for elegance and purity of ornament, which latter is often noticeably crude simply to show the freedom of conception even where the historical development had already led to really beautiful and substantial results.

Among the structures which Hübsch completed in this latter epoch, the oldest, the Kunsthalle (Academy of Fine Arts) at Carlsruhe, is perhaps the noblest and least influenced by the caprice of free conception.

The Trinkhalle at Baden-Baden (*pl.* 52, *fig.* 9) resembles it through the delicate rendering of its general proportions. At the Court-theatre at Carlsruhe (*fig.* 8), where he attempted the rich adornment of the surfaces and architraves, efforts at originality come into disastrous prominence, and this is still more the case in the grand-ducal winter garden, whose individual parts, loosely connected, show good proportions and to some extent original *motifs*, and prove the master an intelligent artist. But his detail estranged talented followers who, as soon as they desired a truly artistic set of details, were obliged to change from indefiniteness into a more positive direction of style, and thus the most eminent of Hübsch's competitors turned toward the Renaissance, which soon completely supplanted his manner, while some leaned more decidedly toward the mediæval.

Maximilianic Era.—While this tendency to a peculiar style of the present and the future founded on the conceptions of a prominent architect developed naturally, another manner arose in consequence of princely authority. King Maximilian II. had ascended the throne of Bavaria, and in contrast to his father, who had given a series of historical styles an opportunity to display their merits side by side, desired to give a character of unity to his own intended magnificent creations, which he wished to place before the eyes of his contemporaries and to transmit to posterity as the definite expression of a new period—of a grand Maximilianic era. Thus it was that he at once offered a prize for the invention of a new style. This princely procedure had more than a whim for its basis: there was in it intense appreciation of the grand problem of the present day, which was to transmit to posterity not only imperishable but also characteristic works. But style is precisely that which as a common possession is evolved from the innermost being and the collective intuitions of a people; it can, therefore, like all historic styles, originate, but cannot be invented.

The prize was given to W. Stier of Berlin, but not so much for the solution of the question of style as for the skilful arrangement of the structure-programme, which, though overdone, is truly artistic. He was too much of an artist to strive for the unattainable: he designed the structures in a free rendering of the Gothic style, with various reminiscences of different buildings not belonging to the Gothic period—reminiscences which indeed in the drawing did not much offend, but which it had been wise to abandon in the execution, lest contrast and want of harmony should make the beautiful, artistically-designed *ensemble* intolerable.

Bürklein.—Though the judges gave Stier the prize, the king's desire was not fulfilled: a new, characteristic, and independent style had not been invented. Yet the king found in Bürklein a master who wasted his talents and staked his reputation to fulfil the wish of his prince. Others united with him, and the entire Maximilian Street in Munich was selected in order to make the experiment in a style whose novelty consisted in treating contemptuously and most irrationally every tectonic conception,



About the middle of the century, while Semper was active at Zurich and built the Polytechnic there, masters who had previously followed other directions adopted the method of Semper—among them (at Munich) Ludwig Lange, whose museum at Leipsic, without being of great dimensions, is important in its artistic relations.

About the middle of the century Architecture made a new start at Stuttgart, and the masters took the edifices of the Renaissance for their model. The fact that so many young architects went to Paris for a longer or shorter time for their improvement was not without influence. Leins and Egle were the first among the leading representatives with whom the younger generation fell in line. The crown-prince's villa at Berg, a work of Leins, was the first important structure in this direction; the Königsbau at Stuttgart, with its imposing colonnades, has many relations to the antique, yet in consequence of its principal features can be reckoned only as Renaissance. There followed the Polytechnic, the post-office, the Academy of Architecture, and the railway-station, the last by Wolf under the direction of Morlok. Gnauth, perhaps the most talented artist, and the most in demand, of the younger generation, sought to reach a more picturesque effect by a strong leaning toward the *baroque*.

In Munich, Neureuther followed the pattern of the Renaissance in his Polytechnic, displaying, indeed, no magnificent *ensemble*, but exhibiting much charming detail, and found great acceptance, principally among the educated class; so that at Munich also the victory of the Renaissance over the style of the future, as well as over the antique and the pseudo-Romanesque, was decisive, especially after a number of masters had arisen who followed with determination the methods of the Renaissance.

In Vienna, Hansen, who began with the pure antique which he cultivated in Greece, and who, after settling at Vienna, exercised himself in Schinkel's manner—induced more by external occasion than by internal impulse—determined to go over to the Renaissance. The Sina Palace on the High Market, the Protestant school, the Heinrichshof, the building of the Musical Society (*pl.* 51, *fig.* 8), and the Epstein Palace (*fig.* 9), are, among many others, the most artistically important of the new edifices of Vienna, to which may be added the Parliament House, the Exchange, and the Academy of Fine Arts.

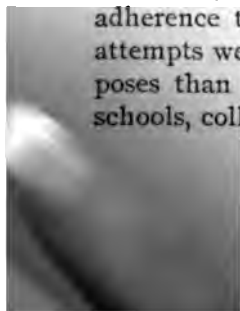
Van der Nüll and Siccardsburg also adopted the Renaissance in the opera-house, yet could not repress all the older Romanesque reminiscences. They inclined more to the French works of the time of Francis I. than to the Italian. Ferstel, in the palace of the archduke Karl Ludwig, more consistently adopted the Renaissance, and the many skilful architects who were engaged on the new edifices joined him and Hansen. Among the great and constantly-increasing number of masters and edifices it would be difficult to name even the most important; it may, therefore, be permissible simply to refer to this astonishing building activity, and to enumerate only a few structures which serve public purposes, such as Ferstel's chemical laboratory, the Royal Museum of Art and Industries and the

the future if the tendency toward the *baroque* had not made itself so prominent that a reaction must be foreseen as the inevitable result. Even though the new style does not proceed directly to the *baroque*, and even if the extensive employment of the German Renaissance—which has itself but slight connection with the Renaissance proper—were not considered, there is yet sufficient evidence manifest that the general feeling still favors the original Renaissance form.

Architectural Restorations.—The idea that, as the mediæval ages gave expression to the Christian spirit, so mediæval art must furnish the best models for churches, caused both Catholics and Protestants in Germany, England, and France to be until a few years ago unanimous in the belief that a Christian church could be built only in the Gothic, or perhaps in the Romanesque, style, and that an archæologically-correct expression of that style must be wrought out. When the Renaissance began to dominate, it excluded from its influence the domain of church-architecture, which remained mediæval. It was principally the necessity for a thorough restoration of all the still-extant churches of the Middle Ages, the desire to complete strictly in the spirit of the age in which they were founded those which had remained unfinished, that resulted in making the contemporaneous scientific studies available for practice. These restorations gave the opportunity to induct a number of young people, both architects and artisans, into the style with a thoroughness that had never been equalled save by the old masters.

In France, Viollet-le-Duc and Lassus displayed their talents in restorations, and a number of other masters exhibited their ability in sterling new buildings. We may specially name the restoration of Notre Dame, together with the erection of a new sacristy and of the charming *flèche*, and the restoration of the Sainte-Chapelle, by these masters. After this all the other churches of Paris and a great part of those of France were restored by these architects or by others of the same class. Of the many new churches which were raised with more or less success in various parts of France, Ste. Clotilde at Paris, by Gau, may here be named.

England was filled with smaller new churches erected in this style, but England also proved clearly the working of a second factor which had contributed to the rehabilitation of the Gothic. We have already explained (p. 289) how in Germany as well as in France and England the abandonment of the antique and the return to the old national styles were demanded in the name of nationality. The French thus held to the French style of the thirteenth century, the English to the various stages of development of English Gothic, and, in fact, found therein the elements requisite for all their present needs, just as in former centuries they had opposed the advances of the Renaissance by the tenacious adherence to this same style. While in France only quite isolated attempts were made to bring the mediæval style into use for other purposes than churches, England was filled with Gothic castles and villas, schools, coll hospitals, stately dwellings, hotels, etc., which are linked



to the past and form a national contrast to the buildings of other lands. It was, therefore, quite natural that in the magnificent structure which was to give monumental expression to the national sentiment—the Parliament House, at Westminster (*pl.* 52, *fig.* 1), built by Barry—the specific English Gothic should find application.

Later Gothic School.—In Germany also, where the specifically German Gothic was chiefly followed, the general desire to provide something national occasioned the return to the Gothic and caused the national German style to come to the front. This was due to the definite feeling that inward piety, which in its time so long withstood the onward march of the Renaissance, was specifically national German; and where such an inclination toward piety was not predominant, there was the idea that the earlier purer Italian Renaissance was national Italian and belonged to Italian joyousness and freedom of life; that in Italy it gave expression to habits which depended on the climate, but that it was not suited to those of Germany, which were brought about by totally different conditions; also that the cosmopolitan later *baroque* direction was but the work of a complete degeneration, so that the German idea could find no other expression save the Gothic. In many stringently Catholic circles of Germany a certain mistrust existed toward the accepted mediæval styles as adopted contemporaneously by other less conservative Catholic and by Protestant circles. It was felt that the Catholic Church was not a national, but a cosmopolitan, institution. At the metropolis of the Church the Gothic tendency had found no standing and had taken no root; the cosmopolitan antique and Renaissance were there cultivated exclusively; yet still in Germany the mediæval tendency forced its way into Catholic communities.

Gothic School of Cologne.—The intelligent acceptance of the mediæval style started with the architects of the Cathedral of Cologne. The two principal masters were V. Statz and Fr. Schmidt, who built a series of churches. The most important structures of the former are the votive church at Aix-la-Chapelle and St. Maurice at Cologne. Later comes the construction of the cathedral at Linz, in Austria. Schmidt went afterward to Vienna, where his *chefs-d'œuvre* (which will be spoken of directly) are to be found.

A number of residences were also built at Cologne, Aix-la-Chapelle, and other places, and the school—in which, meanwhile, young and skilful architects have grown up—is still in full activity. For secular buildings a slight variation was developed out of this, in which, in place of Gothic forms, those of the German and some of those of the earliest French Renaissance are accepted—styles which, as we have before shown, took only certain details from the Italian Renaissance, and which here also, archaeologically considered, can be classed only as a later phase of development of the Gothic, and cannot be brought into consonance with the true Renaissance. The chief interpreter of this style at Cologne was Raschdorf, who came from the Berlin school; his principal work is the facade of the

Rathhaus at Cologne is an admirable work of art. This Gothic school of Cologne, encouraged from England, joined in the fifth decade a similar one at Hamburg, where the Englishman Scott built the magnificent Church of St. Nicholas in the German-Gothic style, and where Bülow and Ungewitter built many secular structures with some specific North-German motives. Other masters followed them; so that a widespread school was soon formed in North Germany.

We reckon here also the attempts to bring into customary use the German and Early French Renaissance in secular structures, the most magnificent result of which was the construction of the grand-ducal palace at Schwerin by Demmler. As the years of political commotion obliged this master to give up the direction of the works, Stüler and Strack came in, who finished it more in the Berlin manner. In general, the Gothic made decided progress in Northern Germany. We may, indeed, entirely ignore all the Gothic efforts of the Berlin school except the most recent; but, on the other hand, Gothic obtained decided importance in the Hanoverian school. Haase has executed an extensive structure in the Christ Church at Hanover; and many private houses in that city, and in Hildesheim, Brunswick, and other cities, are in this manner. Next to Haase, Oppler and a number of younger masters were presently placing their New Gothic buildings among those of other styles. That English influence is of decided importance is proved by the leaning toward the thirteenth-century style, suggested to our architects chiefly through the study of the writings of Viollet-le-Duc, who exercised much more influence in Germany than in his native country, where Gothic was scarcely ever used for secular structures.

Ungewitter, who founded a school in Cassel, has encouraged the Gothic in Hesse more than he has practised it; yet Cassel shows to-day in its new streets many Gothic houses in which the influence of Viollet-le-Duc, which Ungewitter warmly advocated, is perceptible.

In Southern Germany only half-successful attempts were for a long time made. The completion of Ratisbon Cathedral, to which Denzinger added two towers and a transept-gable, is the most important work, and next to it the new Church of St. Elizabeth at Basle, which Riggerbach executed after Stadler's plans. Two Gothic churches—the Protestant St. John's, with the richest French detail, and the new Catholic church, of simple but worthy execution—were recently constructed in Stuttgart by Leins and Egle, the latter of whom proved himself an able Gothicism. Many small structures in themselves successful cannot here be mentioned.

In Austria, Kranner was the first who, in the fountain on the Franzensquai, at Prague (*pl.* 52, *fig.* 2), erected a truly Gothic structure. Then began the thorough restoration of St. Stephen's Cathedral. The competition for the Vienna votive church resulted in the adoption of the design by Ferstel, which was in the style of the French cathedrals. It was commenced in 1856, and is now completed (*fig.* 7).

A few years later Schmidt came to Vienna, where he built four large churches, of which the Stephans Church, shown on Plate 52 (*fig. 6*), is the most important. Among many works designed in Austria proper, he built at Vienna the academic gymnasium, with a magnificent exercise-hall, whose severe Gothic, worthy of praise though it is, was not appreciated by the public so that in the magnificent Rathhaus, which was intrusted to him, he engrafted many heterogeneous elements into his design (*fig. 3*). See page 32.

On the whole, Gothic found little acceptance for secular purposes in Austria, where the Renaissance was completely master of the field. Notwithstanding the bitter contention carried on by the partisans of the Renaissance against the Gothic, Hauberrisser, a pupil of Schmidt, succeeded, though not till after a temporary suspension of his work, in bringing to completion his Gothic Rathhaus at Munich. The strife between Gothic and Renaissance continued, and it seemed as though the Gothic must always give way before the encroaching Renaissance. Of late years churches have been built in the Renaissance style in both Paris and Vienna, and for the most important ecclesiastical structure of the immediate future, the cathedral at Berlin, scarcely any other than the Renaissance style has, under existing conditions, a chance of acceptance. The German Renaissance, helped as it is by its very name, is less a matter of contention: it obtains where Gothic is disliked, though it can scarcely be distinguished from it, and many an architect is contented with his German "Renaissance," which in name at least is not distinguishable from the style which has become most prevalent.

Summary.—We need only remark further that, since all styles have been introduced, the Moorish also has its advocates, though as yet it cannot take root anywhere, and finds application only for the construction of synagogues, as in that at Berlin (by Knoblauch), those of Vienna and Pesth (by the older Förster), those of Stuttgart and Nuremberg (by Wolf), those at Paris, etc. These isolated buildings constitute a mere episode in the architectural movement—an episode which is not possessed of any considerable influence, nor has it laid claim to such.

Yet in an extended series of buildings a movement is perceptible which ignores all considerations of style, all outlay upon architectural forms, as superfluous, and executes purely utilitarian structures simple and plain as the requirements of the general plan and construction dictate. The material thus remains everywhere visible and exercises its influence upon the construction and external appearance. The great number of utilitarian structures which our period requires—the railroads with their stations, warehouses and bridges, the great exhibition-buildings, the factories and market-houses—are examples of this. This tendency is also evident in barracks and hospitals, and extends oftentimes beyond the province wherein absolute plainness the movements which are active against the exaggerations of the

the older school of Carlsruhe, and it is only a more sober rendering of what Eisenlohr so poetically accomplished, but it is also linked with many still-extant popular modes of building, and thus represents to a certain extent the broad foundation of the common people out of which the higher classes arose, just as artistic styles have arisen out of this purely-constructive architecture. Transitions and points of contact with the two other movements naturally also occur. The plainness is not always absolute, and thus many works incline toward the mediæval direction, while the simplest works of the latter again approach the other style. Many of these works incline toward the Renaissance, which is again here and there constructively severe. In pure constructive architecture a new element is introduced through the extensive use of iron, which has here, where architectural forms are not aspired to, its proper place, but which has also penetrated into the other two directions of style. Yet in the severely mediæval direction it cannot find widespread application, while in the Renaissance it entirely renounces its own characteristic forms and accepts the universal one, modified only in certain features. But the employment of iron has also led to some modification of the Renaissance forms into accordance with the characters of the material, and has introduced new elements and new form-combinations into the Renaissance.

2. DEVELOPMENT OF MODERN ENGLISH ARCHITECTURE.

The scope of the original work, as contained in the preceding pages, having precluded an extended account of the architecture of England subsequent to the fifteenth century, it is deemed advisable to introduce some additional particulars relative to those phases which have succeeded the Elizabethan Age.

Sir Christopher Wren, whose work in London was by no means confined to the erection of St. Paul's, designed fifty-three other churches in that city, nearly all of which are extant. Among the most noted are St. Mary-le-Bow, which has an elegant many-storeyed, spire-like steeple 225 feet high; St. Bride, also noted for its steeple; St. Stephen, Walbrook, famous for the skilful lighting and arrangement of the interior; St. James, Piccadilly, unsightly without, but fine within; St. Andrew, Holborn; St. Dunstan's-in-the-East; Christchurch, Newgate; St. Martin, Ludgate; and St. Mary, Aldermary. Most of these churches adorn neighborhoods which, since they have only a weekday population, have little need of them. Wren did well in classic architecture, but he occasionally tried his hand at Gothic with ill success, as, having no love for it, he spoiled all he touched. The western towers of Westminster Abbey are his work.

Later Architects.—Among the architects of the days of Queen Anne and the first two Georges was a pupil of Wren, Nicholas Hawksmore, who built several churches in London, including St. George's, Bloomsbury, which people has been well styled "a masterpiece of absurdity," since it is capped with a statue of George I. and hugged by

the royal supporters. Another architect of this period was James Gibbs, whose church of St. Martin's-in-the-Fields, notwithstanding its late date, has much merit.

Later, in the days of Louis Quinze, came the Adam brothers, Robert and James, the former at Edinburgh, the latter at London, where the sombre Adelphi Buildings and Portland Place, with much internal *rococo* work, remain as evidence of what was then considered art. The Somerset House of Sir William Chambers is a noble work, and at the present time is one of the finest adornments of the river-front.

Batty-Langley Gothic.—One of the worst of English architects was Batty Langley, who tried to adapt Gothic architecture to Roman measures and invented five "Gothic orders." This kind of Gothic, together with variations little better, preceded the true Gothic and even the Greek revivals, and was as bad as the German "theatrical Gothic" spoken of on page 292.

The Grecian Revival was inaugurated by James Stuart, commonly called "Athenian Stuart," who, in conjunction with Nicholas Revett, published a work on *The Antiquities of Athens*. Appearing in 1762, this work was the predisposing cause of the erection of the grand façades of the British Museum, of the Greek propylæa which gives so strange an entrance to Euston Square Station, of churches and town-halls like Greek temples, of the Ionic general post-office, finished in 1829 from the designs of Sir Robert Smirke, and of Grecian mansions innumerable.

Notwithstanding the prevalence of "stucco-" or "compo-" architecture during the earlier decades of this century previous to the Gothic revival, numerous important public buildings were erected in the Greek and the "Italian" or Renaissance style.

St. George's Hall, Liverpool, is a grand classic temple in some respects recalling the Madeleine at Paris. Its principal fronts are 420 feet long, with an advancing colonnade in the centre 200 feet in length and an external Corinthian order 45 feet high. The great hall measures 161 feet in length by 75 in width and height. Its architect, James Elmes, died before its completion.

The Exchange Buildings, Liverpool, form three sides of a quadrangle, the town-hall forming the fourth, and the whole composes an ornate Renaissance group of great magnificence, though the town-hall inclines to Grecian. Another fine structure is the custom-house, which is surmounted by a dome. Its order is Ionic, and it contains a room 146 feet long by 70 wide.

The Royal Exchange, London, constructed by Tite and opened in 1844, an edifice with a fine Corinthian portico having internally a quadrangle surrounded by Philip Hardwick, opened in 1832; a Corinthian portico 400 feet long and surmounting the National Gallery of Paintings (1832-); the Custom-house (1814-1817), by Laine

toward the Thames, by Smirke, may be added to the classical piles before mentioned.

Birmingham has for its town-hall a marble Corinthian temple which was until recently the finest building in that modern city. A few other monumental structures, while following the style then in vogue, entered their mute protest against the prevalence of plastered façades.

Worthy of mention among the London Renaissance structures of the fifth decade of this century, and therefore contemporary with the Gothic revival, are the fronts of the Treasury and the Board of Trade (1847), the magnificent Bridgewater House, built for the earl of Ellesmere and finished in 1851—both by Sir Charles Barry—and the Museum of Practical Geology, by Pennethorne, also completed in 1851.

The magnificent range of Italian palazzi which adorn Pall Mall, including the majestic and severe Reform Club with its grand crowning cornice and its Bramantian windows, the highly ornate Carlton, the Travellers' Club, by Sir Charles Barry, and others, many of them works of the fourth and fifth decades, remain to prove the applicability of the Renaissance to modern uses.

The "Stucco" Era.—The movement in the direction of honest construction, though older in England than in the United States, did not commence until about the fifth decade of the century; it was preceded by an age of stucco, when bad brick-work was made to simulate stone and palaces of pretentious classicality rose on every hand. This was the age of the spas, of Cheltenham, Bath, Leamington, Brighton, Tunbridge Wells, whose older streets are still lined with these stucco palaces, fallen from their high estate, yet for the most part maintained in tolerable order by paint and patching. London had more than its share of this stucco palace-building, and has scarcely yet relinquished it. The invention of Portland cement—a material more durable and more monumental in its appearance than Roman cement—tended to keep up the supply of sham fronts, and long after the greater part of the public and commercial buildings had imbibed a better spirit, and even cottages of small size had returned to honest brick, the mansions of the rich at the West End of London continued to be built of brick, covered with cornices, mouldings, balustrades, and elaborate window-dressings of Portland cement upon brick cores.

But at the age of which we are writing the mania for stucco invaded all classes of buildings; town-halls, assembly-halls, theatres, club-houses, even churches, were infected by it. Political economists lauded stucco as a blessed invention which enabled the comparatively poor man to live in a palace and gave to small places the power to rival large ones in the construction of their public buildings. Architecture, in its true sense, was banished from these compo-façades, which were invariably conceived in a sham manner, with gawky pilasters, usually Corinthian, running up the storeys, and with a lower floor divided into blocks to

The later Portland cement mansions, such as

abound in the neighborhood of Hyde Park, such as were built by the street in the years succeeding the exhibition of 1851, were more ornate: they threw Palladio over for the richer French Renaissance.

The Gothic Revival.—There is no doubt that the rebellion against this sham construction, usually "Palladian," but not seldom blossoming into the hood-moulds, gables, and battlements of a corrupt Gothic, greatly aided the success of those students who from their long study of mediæval structures imbibed not only a love for Gothic, but also an earnest desire for honesty in construction. Such honest construction, avoiding alike the "compo" of a generation ago and the ultra-classicism of the early part of the century, was not applied to mansions and the less costly public buildings conceived in the various phases of the Renaissance until the mediævalists had shown the way.

The Gothic revival, led in England by John Britton, Rickman, the elder Pugin, the younger Pugin, and others, and perfected and continued by Sir George Gilbert Scott, George Edmund Street, William Butterfield, and a host of more or less celebrated enthusiasts for mediævalism, for a while carried all before it. Not only were churches, town-halls, and other large public buildings where the æsthetic idea is supposed to have full scope designed in imitation of some phase of the English or continental pointed style, but hotels, railway-stations, private houses in the city and in the country, club-houses, museums, and even shops, warehouses, and office-buildings, presented to the English public more or less successful imitations of the buildings of the thirteenth, fourteenth, and fifteenth centuries. For a while the perpendicular phase of English Gothic was popular in churches and large public buildings. The Houses of Parliament, at Westminster, were designed and executed in this style, but it was not long before the current of taste ran strongly toward the Decorated or Early Fourteenth-century manner, which became, despite occasional excursions into the simpler Early English of the preceding century, emphatically the style of ecclesiastical buildings.

Transitional and Mixed Styles.—But "Geometrical Gothic" never attained favor as a style for commercial buildings or private dwellings. Repeated failure to adapt it or any other phase of pure English or French Gothic, such as was in vogue during the thirteenth or fourteenth century, to the requirements of modern city or domestic buildings soon led to the adoption of various late phases of the original style, and of transitional and mixed styles such as the English Elizabethan. Pointed windows with traceried heads were not only found too expensive, but were also inconvenient and inimical to the proper diffusion of light in buildings horizontally divided into storeys of moderate height and subdivided into rooms of medium size. The light was dimmed by the heavy mullions in the upper part of the window—and no closing such mullioned windows could be effected. Gothic lent itself to square-headed windows, and to the bands of moulding and ornament, which

mitted the prevalence of horizontal lines, but also adapted itself to endless variations of outline and admitted the existence of extensive flat surfaces.

By almost common consent, therefore, the styles of the thirteenth and fourteenth centuries, Early English and French and Decorated, as well as the "Flamboyant" phase of French Gothic, were restricted to churches and to such public buildings as contained large interior halls, for the lighting of which traceried windows of many lights could be used with advantage, while the latest phase of the Tudor—in which, as at Hampton Court and in Wolsey's work at Oxford, the pointed arch is dispensed with, and square hood-mouldings with returned ends surround the rectangular openings of the doors and mullioned windows—came into favor along with various mixed manners which permitted the use of bays, oriels, and mullioned windows of ample size.

Mullioned Windows, however, with square heads, though they furnish abundant light, do not fulfil modern requirements: they do not, except under protest, allow the use of the sash, which, therefore, some lovers of the antique would have us abandon; but no modern invention has been so thoroughly favored as this form of window. Though it cannot be considered perfect, as the exterior can be reached only from the outside, as but one sash can be thrown open at a time, and as it is with difficulty detached from its frame, still the sash-window is on the whole so incomparably superior in convenience and weather-tight qualities to any form of casement that any style which does not permit of its use inevitably fails to take hold of popular favor. An attempt was made, therefore, to adapt the Gothic style to the sash-window. This involved the absence of mullions, and, as the hood-moulding without the mullion was felt to be a solecism, it disappeared also. The problem now was to be Gothic without tracery, without mullions or hood-moulds, without buttresses—without, in fact, any of the characteristics of mediæval Gothic except some of its mouldings and smaller details. Yet the Gothicists were equal to the occasion, and invented Victorian Gothic.

Victorian Gothic.—The relieving-arch came to the rescue. The true window-head was made square, while above it rose a pointed arch whose face was flush, or nearly so, with that of the wall. The tympanum or space intervening between the relieving-arch and the window-head was then filled in with ornamental brick- or stone-work carved or disposed in patterns. This expedient answered very well in schools, halls, and public buildings of moderate size, where the height of the storey was sufficient to permit the introduction of conspicuous and tolerably high-pitched relieving-arches without too great loss of height in the windows. But private dwellings and offices, though the fashion was at the time in favor of rather small windows, cannot spare space enough between two tiers of windows for the insertion of a pointed arch equal or superior in height to an equi-

ore, resorted to, while all along the colored bricks was adopted in

order to atone for lack of detail. Relieving-arches were pitched low and made of brick between skewbacks of stone; the window-head itself was formed of a low-pitched yet pointed arch; the upper part of the window was narrowed by incurved stones, as though a trefoil were thought of and abandoned for a lintel; or finally a segmental arch with perhaps a Gothic moulding or two upon it was thrown across the opening as though in sheer despair. With such treatment of the openings the Gothic element of the structures was necessarily somewhat subdued, yet gables, finials, panelling, etc., enabled the designers to proclaim the non-Renaissance character of their conceptions, and the entrance-door usually gave an opportunity for pronounced Gothic forms. Polychromy became very decided, and the use of bands of brick, red or black on a buff ground, or buff on white or red, became so general that the manner was commonly dubbed the "streaky-bacon style."

There is no doubt that the teachings of Ruskin, his unqualified admiration of the ducal palace at Venice and of Italian Gothic generally, were factors in the promotion of the Victorian phases of the pointed style, while Street's *Brick and Marble Architecture of the North of Italy* conduced to the same result.

During the seventh and eighth decades Victorian Gothic reigned supreme in private dwellings and was extensively employed in public ones, yet the Renaissance and classic styles were not superseded by it. From the date of the classic revival at the beginning of the century until now various phases of the Renaissance, especially that more properly called Italian, have been largely practised in street-architecture, and have more than held their own in public buildings of a monumental character where symmetry—that bilateral symmetry which is almost universal throughout the animal world, and without which most animal forms would be pronounced ugly—was considered essential. But with the revival of the Gothic came an increased love of the picturesque—a more pronounced rebellion against exact symmetry than had been allowed by the classic styles, though the Italian villa had already permitted considerable latitude in that direction. Nor have the Gothic and classic styles, even with the addition of Victorian Gothic to the one and of various phases of Renaissance to the other, held the field exclusively during the last forty years. Various phases of Renaissance and Byzantine were from time to time imitated, and the dawnings of a tendency to mingle the various styles became pronounced.

The desire for something new, the growing love of asymmetry, and disgust with the comparative baldness of Victorian Gothic finally led to a break in the ranks of the mediævalists. A few prominent architects of the prevalent school decided to abandon pointed arches in domestic buildings, and to strive by the use of the lintel, while in other matters still clinging to mediæval principles, to fulfil the requirements of modern city life. Symmetry was abandoned; picturesqueness was the only

was replaced by quaintness and whimsicality. Out of this medley arose the manner known as "Queen Anne."

Queen Anne Style.—Since every one of the older styles had been tried and abandoned in turn because of its inapplicability to modern requirements, a knot of young architects turned their attention to the later phases of the English Renaissance, especially to the dwellings erected during the reigns of William and Mary, Anne, and the first two Georges—structures built when the needs of life were nearer to those of the present age than were those of mediæval, or even Early Renaissance, times. Notwithstanding their lack of external decoration, their monotony of outline, and their almost complete negation of style, the dwellings and public buildings of the end of the seventeenth and the first part of the eighteenth century were characterized by comfort, commodiousness, and internal fitness for their purpose.

R. Norman Shaw.—Prominent among these architects was R. Norman Shaw, who had been trained in the pure Gothic of the school of Scott. Shaw, seizing on the ample oblong windows, the brick material, and making the most of such decoration as existed in the buildings of Queen Anne's time, succeeded, by imparting to his imitations a picturesqueness of outline which the originals did not possess, in producing effects which pleased the public taste. "Queen Anne" became the fashion, and was spoken of as a style instead of as a debased phase of the classic styles. The demand was equalled by the supply. Shaw was followed by hosts of others, many of whom lacked his artistic skill; and some of the vagaries of this manner will in a few years seem to us as amusingly grotesque as they would have seemed to an observer of Queen Anne's days.

Japanese Art.—Mingling with this eighteenth-century movement, and emphasizing the oddities and irregularities committed in its name, came the opening up of Japan and the widespread introduction of objects of Japanese art. No other people can produce a satisfactory result with so small an outlay as the Japanese: their art is the art of the little. Ceramics and bronzes, wood and lacquered ware, are decorated by them in such a way that they become pictures instead of, as too often is the case with us, simply pattern-covered surfaces. With bamboo and a few boards and mats the Japanese can make a house which is not devoid of æsthetic qualities. Their cottages are full of suggestions for us, as are all their household appliances. They teach us not to copy the large in the small, but to be original, and to take advantage of every peculiarity in the material or in its position. Yet the Japanese, in common with all Mongolian nations, have no Architecture worthy of the name, and their art has nothing of the grand or the sublime.

We will now glance over a few of the principal works executed in Great Britain during the last thirty years or thereabouts, endeavoring as far as possible to keep separate those belonging to the "Free Classic" movement.

Buildings.—At the present time the Episcopalians of

England are pretty well taxed to keep the cathedrals and grand old churches in repair. The Normans were bad builders, though they used an overplus of materials, and most of their work which did not fall down or was not pulled down in mediæval times has had to be restored in the present generation. This restoration is essentially a rebuilding. The churches of the midland counties of England are built of red sandstone of the Triassic formation, similar to the various "brownstones" in use in the United States, and the friable nature of this material causes renovation to follow renovation. Lincoln, York, Salisbury, and other cathedrals in which red sandstone was not used, are in a far better state of preservation.

Cathedral Restorations.—Sir George Gilbert Scott's name is as intimately associated with cathedral restoration in England as was that of Viollet-le-Duc with similar work in France; for, though Scott was not the actual leader of the Gothic movement, he was for many years its most prominent exponent. Few of the English cathedrals are without evidence of his restorations, which for the most part were executed as far as possible in the exact manner of the originals, and few are without much of his original work in the shape of reredoses, lecterns, pulpits, screens, monuments, and other church accessories. Nor was Scott's work by any means confined to the restoration of ancient churches, since probably more designs for churches emanated from his office than had ever before come from one man. Much of this work was necessarily done by assistants, yet Scott himself was a quick and thorough worker, and the average was good. Among Scott's great restorations are the cathedrals of Worcester, Lichfield (the west front of which is probably the most beautiful, though not the largest, in the world), much of Westminster Abbey, including the chapter-house and northern porches, and Christchurch Cathedral and various other works at Oxford. Ely Cathedral was also under his care until his death. Among the numerous new churches designed by him are the fine Cathedral of St. Mary at Edinburgh, which has some Scotch features; the chapel of St. John's College, Cambridge; St. Mark's, Leamington Priors, the choir of which is as lofty as the nave; and Edensor and Doncaster churches.

George Edmund Street came next to Scott in Gothic celebrity. Sir Charles Barry, famous also, was during the concluding years of his life fully absorbed by the Houses of Parliament, while William Butterfield was the leader in a movement in the direction of the greater use of materials of various colors and polychromy generally. Among Butterfield's works may be mentioned All Saints and St. Albans, London, the restoration of St. Cross, Winchester, the parish Church of St. Andrew at Rugby, and the chapel and newer portions of the famous school at the same place. The churches erected in England during the last half of the present century have not all been small ones; in many cases they are noble as well as costly structures.

New Bishoprics.—With the great increase in the number of bishoprics there has come about a redistribution of

in E

lowed by a partition of bishoprics and the creation of new episcopal seats. As it is not imperative that the seat of a bishop should be the largest town in his diocese, cities possessing grand abbeys and minsters have in most cases been made the seats of the new bishoprics.

Cathedral of St. Albans.—St. Albans has a grand abbey, for the most part in the simplest Norman style, though with portions erected at various later periods, and this abbey is now the cathedral of the bishopric of St. Albans. It is the longest of England's cathedrals, but at the same time probably the least lofty, the height of the nave inside being only 66 feet. Lord Grimthorpe expends a large sum yearly on its restoration; he is his own architect, and is engaged in a constant quarrel with those poor architects who require pay for their services. The Norman lantern in the centre, built of Roman bricks taken from the walls of the ancient Verulam, has been supported upon new piers. The methods of Lord Grimthorpe—better known by his former name of Sir E. Beckett—have given rise to much discussion. St. Albans was primarily a Norman structure, but contained, like most cathedrals, work of various later dates. Architect Beckett has chosen to consider everything later than Geometric Gothic irredeemably bad, and in his restoration of the west front has deliberately pulled down the large perpendicular window in order to substitute therefor a modern one of his own design in what he believes to be a better phase of Gothic.

Population in England has sought the North, and, except in Eastern Yorkshire, where the large Minster of Beverly is not needed for cathedral purposes, has outgrown the cathedral accommodation furnished by mediæval minsters. At Manchester was built a cathedral Perpendicular in style and singular in not possessing the cruciform shape. The huge ungainly Church of St. Nicholas at Newcastle is to be Newcastle cathedral until a new one takes its place, while the new bishopric of Liverpool has also a temporary cathedral in St. Peter's. The site for the new cathedral at Liverpool is fixed, and a competition has been held, resulting in the choice of three designs above all others. All three may be called Gothic, but, while two are strictly so in outline and interior, the third (that of William Emerson) is concentrated into a grand cupola-crowned pyramidal pile with features which bring to mind the Florentine duomo, and even recall Sta. Sophia.

Truro Cathedral.—Among the new cathedrals erected in the present period is that of Truro, the foundation-stone of which was laid in 1880. It is a good example of Early English, with lancet arches and little tracery except quatrefoils pierced in the tympani of the arches which enclose the twin-lancets of the clere-storey. There is a fine rose-window above the triple porch of the south transept. The west end has two towers, and a larger tower, open interiorly, so as to form a lantern, occupies the intersection of the nave and transepts. In true cathedral fashion, this church has a chapter-house and cloisters as well as a baptistery. Its dimensions, ed with the larger class of mediæval cathedrals, are

nearly equal to those of some of the smaller ones, as Wells, Lichfield, or Exeter. It is 280 feet long, 65 feet wide across the nave and aisles, and 115 feet across the transepts. It is vaulted throughout. The outline of the towers seems rather ungraceful, as the spire of the central tower is too low and the spires of the western towers do not sit well upon the sub-structure. Other fine churches are those of St. John in Red Lion Square, London, and St. Augustine's at Kilburn, both Early English. St. Michael's Priory and pro-cathedral, Hereford, erected from the designs of Welby Pugin, and Stonyhurst Chapel and College, a large Tudor-Gothic pile with a frontage of nearly 600 feet, may serve as examples of the numerous large structures which have of recent years been erected by the Catholic denomination in various parts of Great Britain.

Public Buildings: University Museum, Oxford.—Among the structures erected previous to the end of the seventh decade, when Gothic was the accepted style and naturalism in art was carried almost to an extreme, is Deane and Woodward's University Museum, at Oxford. Here the capitals of the columns which, grouped with more massive piers, support the two-storeyed arcade that surrounds the quadrangular roofed court are all copied from nature, and the ornamental iron-work of the roof takes plant-forms and luxuriates in foliage.

Keble College, Oxford.—Another noticeable modern ornament of Oxford, also executed in the seventh decade under Gothic influence, is Butterfield's Keble College, the bright tints of whose walls seem to have been intended to contrast with the sober grayness of older colleges; yet time will tone the color, and there is beauty here, especially in the lofty chapel, which may be considered a worthy paragon of the more ancient university chapels. The stained glass, mosaics, and marble-work of this chapel afford a most gorgeous effect of color.

The New Law Courts, London, occupy a prominent position at the junction of the Strand and Fleet Street. In appearance they contrast widely with the Vienna Rathhaus; the London edifice is as wildly and purposely irregular as the German one is tamely symmetrical. Both lack a central feature of sufficiently commanding importance, and thus neither is equal, in a general view, to the Houses of Parliament at Westminster. There is no want of variety in the exterior of the Law Courts, nor can either picturesqueness or beauty of detail be denied it; yet it lacks grandeur—that characteristic which is to the picturesque what beauty is to mere prettiness. The interior seems to fail just where failure can least be justified—namely, in fitness for its purpose. The corridors by which access is gained to the various courts are narrow and dark; they seem to be really secret passages in some mediæval pile. The central hall is magnificent. It is a stone-vaulted cathedral nave used for civic display, but already it contains the tomb of its architect, ~~Edmund Street~~ worried to death by the circumstances of this same building.

It appears probable that this build-

a grand work, has rung the knell of mediævalism in England—at least in so far as any but ecclesiastical works are concerned. It must be remembered, however, that the commission appointed for the purpose deliberately chose this design as the one which best fulfilled its requirements, in preference to the more noble ones of Scott and Burges; the shortcomings are, therefore, to a large extent the result of compliance with imposed conditions.

The Albert Memorial, in Hyde Park, London, opposite the Albert Hall, is a gorgeous Gothic shrine rich in marbles, gilding, and fresco, and rivals in splendor anything of the kind which the Middle Ages have left us. Its upper platform or base is adorned with four symbolical groups of statuary, one at each projecting angle, and the plinth bears reliefs of one hundred and sixty-nine celebrated men—artists, architects, poets, musicians, etc.—of all periods. Groups representing the continents are also placed at the angles of a lower raised platform, which is again surmounted by a second. Under the ornate canopy of the centre sits a colossal bronze gilded figure of Prince Albert, to whose memory this magnificent monument was erected as a tribute of gratitude by the English nation. The architect was Sir George Gilbert Scott, while Foley, Theed, Armsted, and other sculptors were engaged on the accessories.

Wallace Memorial.—The memorial to Sir William Wallace, Scotland's most honored patriot, crowns the Abbey Craig of Stirling, 500 feet and more above the plain, and itself rises to a height of 220 feet above the rock. It is a massive tower with walls 15 feet thick at the base, and is severe and unadorned, in harmony with the cliff from which it springs. Higher up, a staircase-turret with ranges of small windows following the rake of the stairs frees itself from one angle. The terminal storey of the tower is full of quaint corbelling, above which three richly-decorated flying-buttresses unite to support an elaborate finial. This crown of arches and pinnacles forms a striking contrast to the severity of the masses below.

Horticultural Society's Gardens.—The International Exhibition of 1851 gave an impetus to building-operations in the vicinity of Hyde Park, and a group of important Renaissance public buildings erected at South Kensington during the sixth and seventh decades effectually introduced terra-cotta as a material capable of effective use in conjunction with brick. Among these are the large rectangle of the Horticultural Society's Gardens, the Albert Hall, and the South Kensington Museum. The first is a series of decorated galleries and pavilions, and affords a graceful example of light terra-cotta ornate shafts supporting round arches, in harmony with the Albert Hall, which is visible above the dome of its conservatory. The quadrangle has during the last five or six years been occupied by wooden shanties erected for exhibition purposes; so that it is difficult to form an idea of its original effect.

Royal Albert Hall, completed in 1871, is a sort of modern model roofed. It is a florid Renaissance structure of red

brick and buff terra-cotta, the latter of a dirty hue which does not harmonize well with the former. Its dimensions are 200 feet in length, 180 in width, and 140 in height. It is the work of the younger Barry, who here, at Dulwich College, and in other buildings was largely instrumental in introducing terra-cotta.

The South Kensington Museum was built to contain one of the world's finest art-collections, and also to serve as a school of design. Erected at various intervals before 1870, it is not a building, but a heterogeneous pile of courts and galleries which seem to have been thought of separately and each designed without reference to what preceded it or to what might succeed it. Nor this alone: it was designed, so far as any design is evident, in defiance of that cardinal rule of Architecture which declares that the leading members of the decoration must grow naturally out of the construction. The method here pursued was to throw together blank piles of brick, and then to apply terra-cotta columns and other decorative materials upon the exposed surfaces. Some of the surfaces have received their ornamental coating, others have not; and the result is a medley masked internally by the size of the separate parts and the prominence of their contents, but painfully visible externally. Most of this applied decoration, whether external or internal, is in itself good, since it is principally the work of young artists trained in the art-school. The excellence of this applied work renders it the more deplorable that it should be lavished upon so deformed and inartistic an object. The science-schools, facing Exhibition Road, and part of the interior of the quadrangle are the only external portions which can be said to be architectural. The applied architecture of these portions was the work of the talented artist Godfrey Sykes, who was educated in the art-schools and died young. The same artist also decorated the fine interior of the south court, the upper portion of the walls of which has thirty-six mosaic full-length portraits of celebrated artists.

Although the mixture of Gothic forms with classic details is now in favor, "Italian," or English-Palladian, Renaissance is still employed in many monumental buildings. Thus the Birmingham Council-house and Art-galleries has its two lower storeys fashioned into a basement on which rests the Corinthian order of the two upper storeys. The regularity of the façades is broken on one front by a tower, on another by an entrance-portico bearing above it a grand arch supported on each side by coupled columns.

Colonial Offices.—The immense mass of buildings including the Foreign, Indian, and Colonial Offices was the work of Scott. It can scarcely be called his fault that they do his fame no credit, for he, the Gothic architect, was bidden to make them Renaissance, and has done so in not conspicuously bad fashion, although, had he not been persuaded by his friends, he would have preferred to be set a

than thus to abandon his cherished principle.

When the more strictly classic por-

too small for the business of the department, a Palladian structure finished in 1874 was built upon the opposite side of the street; the large edifice occupied by the Royal Academy in Piccadilly is Renaissance, and the accepted design for the new Admiralty and War-offices, the work of Leeming and Leeming, is in the same style, with broken entablatures and a profusion of dome-capped towers. The masses are well arranged, and the general outline, as well as the sky-line, is varied.

Other Renaissance structures are the new wing added by E. M. Barry to the National Gallery, the Farringdon Street Market, which is in the French manner, Leadenhall Street Market, etc. Many of the markets of London and other cities, as Billingsgate Fish-market and Smithfield Central Meat-market, are spacious and fine buildings with iron roofs, and usually adhere to Renaissance forms.

Town-halls.—What the city-hall is in the United States the town-hall is in England, for in that country no town, however large, has a right to the title of "city" unless it is the seat of a bishop. Among the finer town-halls erected in modern years may be cited that of Halifax, the work of Sir Charles Barry, those of Wakefield and Sheffield, that of Leamington, an elegant somewhat Free Classic structure, and those of Manchester and Leicester, the last of which was the first public building of any note executed in the Queen Anne style. Middleborough has a fine new Gothic town-hall. The new municipal offices at Nottingham, the work of F. H. Oldham, keep clear of Gothic details, but in the arrangement of the larger masses are full of reminders from various parts. The great square tower recalls at once the *beffroi* of Belgium and the *campanile* of Italy, while the manner in which the bells are hung in full view across arched openings is Spanish.

London is divided into numerous parishes, each of which has its "vestry-hall," and some of these halls—as, for example, the Queen Anne one at Kensington—are fine structures.

Educational Buildings.—Among educational buildings the important additions (Gothic) to Magdalen College, Oxford, completed in 1885 by Bodley and Garner; the new portion of Gonville and Caius College, Cambridge (also Gothic), by Alfred Waterhouse; the Manchester School of Art, a Free Classic structure with round-arched openings except on the end pavilions, where the three square-headed windows are embraced in a round arch, the tympanum of which is filled with sculpture; and the "City and Guilds of London Institute for Technical Education," South Kensington,—are worthy of mention. The latter may be called Free Classic, though it differs widely from the style of R. Norman Shaw, who led the way in house-construction. It is a symmetrical structure of brick and terra-cotta, with preponderating horizontal lines, an ample semicircular-headed entrance, and windows grouped into sets separated by flat bearing embracing-arches.

Examination Schools, Oxford, though pleasing in outline, of Renaissance and Late Gothic which is not attractive

because it is a well-blended. A Renaissance porch and cupola are set upon a pile of story of arched windows, buttresses, and pinnacles, and the effect is that of a structure built at two distinct epochs, although sometimes called "the whole in granite." Since education has been made compulsory in England, "model schools" have been erected in every large town, and even in the public schools in the United States, but as a rule most model plans fail in their outline. Cross Hill Board Schools, at Halifax, a good stone structure, and Walton Lane Board Schools, at Liverpool, may be cited as examples. The latter, though a large and plain brick building, takes advantage of the acute angle formed by its fronts to obtain a well-proportioned clock-turret and a circular bay-window.

The Natural History Museum at South Kensington is one of the most notable places recently erected in London. It will eventually form a quadrangle, the external wallings of which will be three storeys in height, while the end walls will be occupied by halls lighted from the roof. One of the floors, the great central hall, and the lower halls right and left of it, are now completed. The style of the structure is that phase of the Renaissance with which the name of the Lombards is associated. The design, with its rows of moldings, and the round-arched windows recall the Norman churches of England, but the peculiar moldings adopted by the Normans are not employed, and the materials—yellow terracotta and blue bands—reminiscent of Italy rather than of England.

The principal front, with its central pavilion and octangular towers, presents a pleasing variety combined with symmetry, and the interior is still more striking. The great hall is lighted from above and surrounded by trifling galleries, which, with the roof, are carried by clustered columns whose shafts are wrought with varied patterns. At the end of the hall furthest from the entrance the grand staircase rises to the second floor. Access to the third floor is obtained in a novel way: the second bay beyond the entrance is spanned by a structure which recalls the Rialto at Venice—a walk thrown across from side to side to support the staircase from the second to the third story. There is in the interior an air of spaciousness which is absent in most museums. Economy of space has not been aimed at so much as amplitude. The galleries are lofty and well lighted, and the piers and columns are embellished with appropriate and original details. Thus, three twisted snake-heads form a running moulding for an arch, climbing monkeys are made to decorate a concrete member, and figures of fishes and reptiles diversify the flat surfaces of the piers. The architect is Alfred Waterhouse. Fine though this structure is architecturally, it does not fulfil its purpose so well as some more modest structures with smaller halls or with galleries surrounding a central court.

Clubs have already been mentioned in connection with the Renaissance structures in Pall Mall (p. 200). Clubs, social, educational, and sporting, are far more numerous than in the latter part of the last century.

into the life of the people, in England than in the United States, and it is therefore not surprising that club-houses attain architectural importance. Every town has its Conservative and Liberal clubs, whose houses are often among the finest buildings of the place. In London may be cited the National Liberal Club, by Waterhouse, with its fine and peculiar tower, the Grand Conservative Club, on Northumberland Avenue, and the City Liberal Club, Walbrook, a quietly-designed Renaissance structure in rich materials, with no trace of the orders except pilasters as mullions between the windows.

The Birmingham Liberal Club is a favorable specimen of the application of the Gothic style to modern requirements. The lower floor has a tier of pointed arches, the windows of the second or principal floor are geometric, while the upper storeys have trefoil and square heads. Horizontal lines predominate, yet the detail is entirely Gothic. The angle of the two fronts is carried up into a low tower, the upper part of which bears four angle-turrets separated by a balustrade which partly masks a range of trefoil-headed windows.

Charitable Institutions.—Hospitals, almshouses, workhouses or poor-houses, and asylums are numerous throughout the British Islands. Many of them are rich institutions, and others are erected by wealthy districts or towns; and thus, although the greater part of the older buildings have little merit, those erected during recent years often attain architectural importance.

St. Thomas Hospital.—The finest of the London hospitals is St. Thomas's, on the Southern Embankment of the Thames, opened in 1877. It consists of eight large blocks built of brick with stone dressings connected by corridors, and may be reckoned one of the most beautiful of the Renaissance buildings erected previous to the invention of the Queen Anne style. It forms a fine contrast to the Houses of Parliament, which front it upon the opposite side of the river. St. Peter's Hospital, in Covent Garden, is a Queen Anne structure, and Batley Cottage Hospital may be cited as a pleasing specimen of Free Classic, regular and symmetrical in all its parts, and with tiers of mullioned windows surmounted by equilateral gables.

London Street Improvements.—Within the last three decades street improvements have been effected in London upon a scale little less important than in Paris. Not only has the north side of the Thames been confined, from Blackfriars to Westminster Bridge, by the broad and handsome quay known as the Thames Embankment, but a portion of the south side, west of Westminster Bridge, has been similarly improved, and two grand avenues, Queen Victoria Street in the city proper, and Northumberland Avenue, have been cut through to the Embankment from the main thoroughfares nearest to them. All these streets and quays are now ~~filled~~ with fine buildings. The Queen Anne offices of the London School of Hygiene and Tropical Medicine, the new library of the Temple, and the extensive pile of St. James's Palace are upon the Embankment, along with many other

structures of less note, and the whole line will ere long present a highly-architectural aspect strongly contrasting with the river-fronts of New York and Philadelphia.

Holborn Viaduct.—Another great improvement is the Holborn Viaduct, which, bridging a valley that for ages has been a serious impediment to traffic, necessitated the rebuilding upon a grand scale of the houses along its line, as well as the construction of the arches of the viaduct itself. Other new streets are Victoria, Westminster (now lined with "residential suites"), Cannon, City (a mass of business buildings), and Shaftesbury Avenue, recently cut from Holborn to Piccadilly.

Commercial Buildings.—Office-buildings have not in England attained the prominence they have in America. The elevator—that indispensable adjunct of loftiness—has not even in London made its way into popular favor as a means of reaching the upper floors, and thus buildings occupied by banks and offices seldom exceed five storeys in height. As an example of a London street-building the St. James branch offices of the Alliance Assurance may be mentioned. These are Queen Anne, closely approaching Flemish Renaissance. The windows are large and mullioned, carved panels fill the spaces between them, two broad arches constitute each front upon the ground floor, and a turret at the angle forms an oriel in its lower part and merges by corbelling into the ground-floor. Finsbury Chambers is another metropolitan example of Queen Anne.

In the vicinity of the Bank of England, London, is a mass of ambitious and costly structures in the façades of which stone plays a leading part, and among which much beauty may be found. Various phases of Renaissance take the lead, but Gothic of Italian and Victorian affinities is by no means wanting.

The Store, in the American sense of the word, is also less prominent in England than it is in the United States. Great retail establishments exist, and plate-glass fronts are as abundant in London as in New York; but the warehouse is, as a rule, more completely severed from the store or shop than it is in America. Great care is often bestowed upon the exterior architecture of warehouses and factories. In manufacturing towns like Birmingham, Manchester, Sheffield, Leicester, etc., this class of structures forms almost the principal ornament of the streets, equalling the public buildings in magnificence. The line of Queen Victoria Street from the Mansion House to the Thames Embankment is filled with magnificent commercial buildings, chiefly stores and offices.

The mullioned window, often divided horizontally by transoms, survived from the Gothic to the Renaissance, and has been largely introduced with good effect in commercial structures of the so-called "Queen Anne" type. Since this feature is really a Gothic one and since the high gable and the projecting oriel have the same general effect of these piles, notwithstanding their class different from that of domestic Gothic century.

Hotels.—Though America is the land of large hotels, England, and especially London, have some that are immense. It is now the system to combine a hotel with a railway-station, the train-shed of which is spanned by a huge iron vault. Cannon Street Station has its great hotel in florid Renaissance, and, with its attached semicircular iron vault, was esteemed Titanic until surpassed by the not dissimilar station and hotel at Charing Cross. Both of these are the works of the younger Barry, and both are greatly surpassed by the grand terminus of the Midland Railway at St. Pancras, with its immense Gothic arched roof and its huge attached hotel—a monumental mass of brick and stone Gothic designed by Scott and unequalled in external nobility. Another large and fine hotel of picturesque outline is the Langham, and still another the Hôtel Métropole. The Central Hotel, Glasgow, is a fine Free Classic structure with some details which recall the Florentine Renaissance, yet has lofty gables and dormers two storeys high. Grand hotels are also to be found at the various watering-places, as Brighton, Hastings, Scarborough, Aberystwith, etc., which have risen into importance all round the British coasts, and these hotels are usually of substantial stone and brick. Akin to hotels are restaurants and dining-halls, which are becoming prominent in the large cities, especially in London.

English Railway-stations, even when not conjoined with hotels, are usually substantial structures of brick or stone, or a combination of both, built with a view to architectural appearance. This is especially the case upon the lines of the great companies that divide the North of England between them. Such dépôts as those of York or Rugby, although not great termini, are seldom equalled in America by the termini of grand trunk-lines, and the smaller way-stations have often considerable architectural merit.

Apartment-houses have not as yet come into great favor in London, which, like Philadelphia, is a city of homes. Nevertheless, a certain number of "residential suites," as the Londoners prefer to call them, have been erected for the abodes of the rich, and for the artisan class a number of large but comparatively plain piles have been built by the administrators of the Peabody Fund and by the Industrial Dwellings Company. The greater part of the better class of residential suites are in Westminster, Pimlico, and South Kensington. Victoria Street, near the Houses of Parliament, is almost a continuous line of this class of buildings, which are here usually eight storeys in height, although there exists near by, overlooking St. James's Park, a lofty pile of thirteen storeys. Terra-cotta is freely used in the decoration, and on the whole the architecture is of a tolerably high order. There is not much pronounced Queen-Anneism here, but this style is prominent in the Albert Hall mansions and other tall piles of residential suites at South Kensington. Of red brick, substantial and purpose-like, with balconies, broad elliptic arches, brick pilasters, and other features of the school, these structures are of home-like, though rather homely, merit.

Dwelling-houses.—Although large numbers of houses erected in the older manners, the most noticeable recent done, as well as of other towns—for the style of the metropolis throughout England—are Queen Anne. Cheyne Walk, Cl large red-brick Queen Anne mansions, some with singular bay-windows peering out among the brick-work, after the English farmhouses, yet on the whole not unpicturesque. Chelsea—the artists' quarter—is full of quaint eighteenth-structure for the most part the work of the late Mr. Godwin. The most pronounced eccentricities of the Queen Anne style are at Turnham Green, a suburb of London, where tiles creep over the houses as shingles do in America, and where the picturesque is utterly missed by a too great angularity and of that veiled symmetry which is necessary to it.

Although the English Queen Anne houses do not have roofs, shingled or tiled sides, and sunburst ornaments to the eaves, as in American houses, they combine with their half-timbered details the essentially Gothic features of projecting upper stories, timbered work, mullioned windows, oriels, and high gables, to such extent that the *ensemble* is Gothic.

An external projecting entrance-porch is a common feature for residences, not only in the country, but also in the inner suburbs of the city; but it is seldom that this porch develops into a piazza by running across an entire front or surrounding more than one side.

English Architecture in India.—As has already been remarked, the modern structures of Hindustan are no longer characteristic of the races which inhabit that great peninsula, but bear the impress of the conquering race. The art of the present age is world-wide, and the influence of Europeans has caused their architecture to supplant that of the natives. It has not been possible for the English, any more than for the French, which at various times in the world's history have held the balance of power, to possess of art equal, or even superior, to the countries they have conquered. In the adoption of some of the arrangements and *motifs* of Indian architecture, the early days of English rule this was not done. The styles were unknown and unstudied by the Feringhee, who copied the Palladian structures to his entire satisfaction. But the exigencies of climate and position taught him something, and the study of native architecture, by British and Mohammedan, raised up admirers of it. The Police Courts at Bombay, strictly Gothic though they are, are better adapted to climate in the number of open loggias that adorn them than the tower of Allahabad University, though designed by a European. In India, we have what is practically, in outline and in detail, a new style.

Public Buildings.—The Government Buildings, Calcutta, present a fine example of the new style, with decorations of buff terra-cotta, arranged in a manner which is architecturally upon the conventionally correct.

earlier days of English rule. In order to take advantage of the prevailing wind, these buildings form a narrow main line with three projecting arms, and the foundations, as is necessary in the swampy soil, are built with the greatest care to obtain an even bearing. This precludes great picturesqueness of outline and everywhere limits the structure to three storeys, yet a pleasing effect is obtained by the altered fenestration of the pavilions.

3. FRENCH ARCHITECTURE.

France is the most self-concentrated of nations, the most given to self-admiration, and the least prone to borrow ideas from others. There is nothing startlingly original, nothing strikingly picturesque or overpoweringly grand, in modern French architecture: it is but a variety of Renaissance founded in all its details upon classic traditions; yet it is capable of considerable variety, ranging from a quiet lintelled style with carved friezes and string-courses and a terminal cornice to the richest exuberance of columns, pediments, vases, mansard roofs, and tall dormers.

A description of the architecture of Paris is a description of that of all France, for modern art in France is homogeneous, or nearly so. Magnificent regularity is the great characteristic of the streets of Paris. Each building has, indeed, features of its own, but the marked uniformity in height, the perfectly straight building-line, and the almost complete rule of classical motives are destructive of that picturesqueness which is met with in London and New York, and the want of color, the universal gray, adds to the magnificent monotony.

The Louvre, now shorn of its former companion, the Tuileries, the last remnants of which were swept away with the Commune which destroyed it, still stands unrivalled among Parisian structures. But edifices which more or less imitate the new Louvre have been built all over France, for the great pile, lacking in concentration, yet grandiose in all its parts, was epoch-making. Among these offsprings of the Louvre may be mentioned the Hôtel de Ville at Marseilles, that at Havre, and the new Bourse at Lyons.

Paris has a perpetual increment of large structures of all classes—theatres, markets, exhibition-buildings, railway-stations, hotels, and grand mansions. The Halles Centrales, close by St. Eustache, are the best known of the markets; they are principally of iron, in ten blocks divided by streets.

The "Gares," or railway-stations, are huge straightforward structures of masonry and iron, often grand in outline, but lacking the originality of such buildings as St. Pancras at London or even Broad Street Station at Philadelphia. Too often they fail in perspective. Thus the termini of St. Lazare and of the Strasburg Railway have a façade consisting of a central portion and two advancing wings equal in height to the centre. From the arrangement it results that unless the spectator stand in the exact centre, and a central portion as to the wings, the latter appear to be is evident in many French buildings. French

architects seldom make perspectives; they study out every detail carefully and proportion masses and openings in a most painstaking manner upon successive series of sketches, studies, and finished drawings, but the actual effect of recess and projection is unknown until execution reveals it.

The New Hôtel de Ville at Paris, erected in place of the one destroyed by the Communists, is a magnificent structure 464 feet long and 265 feet wide, with four façades, of which the one facing the Place de l'Hôtel de Ville is intended for the principal. It has the usual beauties and faults of French Renaissance, but affects rather the Renaissance of the age of the old Hôtel de Ville than that of the Second Empire. It has high roofs, dormers, a central tower, ample portals, and a profusion of sculpture and statues. The openings are round-arched, and are separated from one another by pilasters. The central pavilion of the principal front is lower than some of the adjoining ones, which is not the case on the rear, the façade of which centres better. The front upon the Rue de Rivoli is scarcely important enough for that street.

Mairies.—Although the Hôtel de Ville is the chief of the Parisian municipal structures, many of the *mairies* built for the administration of the various arrondissements of Paris are fine and substantial structures. Like most French buildings, they generally surround a courtyard.

The Eiffel Tower.—Iron is extensively used in Paris as a building-material. Not only does it compose the roofs of railway-stations and exhibition-buildings, but even churches are often to a great extent built of it. The grandest of iron structures—and, indeed, one of the world's wonders—will be the great tower projected by Eiffel. This loftiest of human structures will rise from a rectangular base to the height of 300 metres (984 feet), and will thus far exceed in elevation every other structure yet erected. The rectangular base is pierced by a grand arch beside which that of the Arc de Triomphe de l'Étoile sinks into insignificance. The immense latticed constructions which form the abutments of this arch swing toward one another with a parabolic curve like that of a lighthouse; a second great arch, of narrower span, stands above the first, and from this point upward the tower rises as a unit in light open lattice-work. There is certainly architectonic effect in this great tower, obtained without any imitation of the forms of stone and due to mass combined with gracefulness and symmetry.

Churches.—Among the modern churches of Paris may be mentioned St. Augustin, a florid Renaissance structure with an iron roof; Notre Dame d'Auteuil, a basilica with a heavy vaulted roof and broad transepts of slight projection; St. Joseph's, a Romanesque church with transepts, an eastern chevet, and five bays in both nave and choir; and the remarkable Church of the Sacred Heart at Montmartre, a Lombardic structure with a large dome at the intersection flanked by four smaller ones, having at the eastern end a lofty campanile. — spire, and tur. roofed with cone-scales in stone, and marble in broad bands.

Theatres are far more conspicuous edifices in Paris than in the United States, or even in England. As a rule the auditorium is not large, since only the new opera-house—or Académie Nationale de Musique—the Théâtre du Château d'Eau, that of La Gaieté and the Châtelet seat more than two thousand persons each. The last, which has a simple somewhat neo-Grecian front upon the place of the same name, has much the largest capacity, since it has seats for thirty-six hundred auditors.

The Grand Opera-house (*pl.* 53, *fig.* 1). — Of all the Parisian theatres, the opera-house, by Garnier, is the grandest, and is, indeed, the most monumental structure that has been added to the city of recent years. Its superficial area is 11,337 metres, and its cubical contents are 423,600 metres. The opera-house of Vienna has a superficial area of 8567 metres and a cubical content of 222,777 metres, while that of St. Petersburg is but little more than half the size of that of Vienna, and that of Berlin has an area of only 1891 metres. The width of the façade of the Paris opera-house is 230 feet, and the greatest width of the building 408 feet, while its height from foundation to summit is 266 feet.

If the Palais de Justice at Brussels must be regarded as the most monumental of the buildings of the present age, the Paris opera-house must take rank as the richest in artistic decoration. In mere costliness of material, in splendor of marble and mosaic, painting, sculpture, and bronze, few buildings can compare with this, and its artistic wealth may be inferred from the fact that fifteen eminent painters and fifty-six eminent sculptors, besides nineteen sculptors of ornament, were engaged upon the exterior and the interior.

The magnificence of the staircase, of the foyer and ante-foyer, of the stage and auditorium, and, in fact, of the entire interior and exterior, places this theatre at the head of its class and makes it a model for others; yet, viewed in the light of contemporary structures in Paris, the details of this famous pile, especially in the interior, are extravagantly *baroque*. The grand staircase is a mass of broken curved pediments with masks or elliptic shields thrust in between the divided parts. But the dazzle and glitter of the materials, the grandeur of the entire conception, and the beauty of the carving atone for the extravagance.

Notwithstanding its great dimensions and magnificence, the opera-house is less striking in its exterior effect than would be imagined by those who have read only vivid descriptions of it. The varied colors have already toned down to the ordinary Paris gray. The façade is not improved by a very heavy attic, and the great height of the structure is not apparent from the adjoining boulevard in consequence of the thrusting forward of the lower part of the building, containing the staircases, dressing-rooms, etc. These mask the great masses of the stage and auditorium, as the grand dome of St. Peter's is hidden by the lengthy nave.

Theatre of Monte Carlo, at Monaco—in which Garnier's exuberance is still more fully—is a work which was studied and executed but which is really the ripe fruit of its architect's

work at Paris. Vigorous and rich in all its details and thoroughly well arranged, some critics consider this Garnier's masterpiece.

Eden Théâtre.—Parisian architecture rarely goes beyond its conventional regularity, but the Eden Théâtre exhibits an effective combination of Renaissance, Moorish, and Hindu. The windows, whether single or in triplets, have cusped heads and are enclosed in rectangular moulded frames. Towers not unlike Burmese pagodas terminate the structure upward.

The Palace of the Trocadero, a portion of the French exhibition-buildings of 1878, remains as one of the permanent sights of Paris; its twin-towers, separated by a massive pavilion, make it a conspicuous object from many parts of the city.

The École des Beaux-Arts at Marseilles is a favorable example of that painstaking, thoroughly well proportioned, but formal, style which we all know as modern French. There is at each end a bold entrance with balcony over, the superstructure forming two pavilions framing in the series of large round-arched windows which light the principal hall. Between each pair of windows is a short column bearing a bust set in a niche.

Parisian Dwelling-houses.—Although the new streets of Paris adhere as a rule to the conventional French manner, and although stone is the material most affected in the façades, yet in some quarters there is evidence of a tendency to use brick, and even terra-cotta, and to depart somewhat from conventionality. In and near the Place Malesherbes much originality is exhibited, and this is also the case in the Place de Bitché, south of the Arc du Triomphe. Some of the buildings here are conceived in the Gothic spirit, but in a Gothic modified to suit modern needs. Colored tiles, pieces of faïence, and red and yellow brick afford a pleasing contrast to the gray uniformity of Paris generally.

Seaside and Suburban Houses.—The piazza—that greatest of American additions to the comfort of a summer residence—has not yet reached French watering-places. The seaside buildings of Trouville and Deauville are counterparts of Parisian houses; there is nothing distinctive about them. The Frenchman does not seem to possess the love of the country or of the picturesque which is common to the American and to the Englishman. When he goes to the seaside or to the country, he likes to take the city with him, and eats and sleeps in a city house. Trouville has an exception—a half-timbered house filled in with brick, with both gables and finely-carved details, a clever adaptation of the style of the sixteenth century.

4. ARCHITECTURE OF BELGIUM, HOLLAND, ETC.

The Palais de Justice at Brussels (*pl.* 53, *fig.* 2) is the most monumental work of modern times, and the one which by common consent of all familiar with it would most probably be selected as worthy of a place beside the greatest masterpieces of Greece or of Rome. It is said that when Garnier, the architect of the Paris opera-house, visited the Palais

during its construction, he remarked, "There is but one monument in Europe;" the procureur-general replied to the king of the Belgians, who said that the country would soon possess a temple erected to Justice, "Sire, are you quite sure that it is not rather a temple erected to Architecture?" The Palais stands upon the highest ground in the city, towering grandly, with a pyramidal outline at the end of the Rue de la Régence, and still more grandly dominating the broad area of the lower city, which is reached from it by a series of magnificent staircases and terraces.

The architect, Joseph Poelaert, was a Belgian. He was entrusted with the edifice after the failure of a public competition to fulfil the requirements. He produced his design immediately, for he had worked at it in secret for ten years. In every sense it was his monument. Elderly when appointed, he was unnerved by the responsibility of so immense a structure, became so excitable that he could work at his drawings only in the dead of the night, and finally went out of his mind. After lingering twelve months, he died at the age of sixty-three. The style of the vast pile may be said to be mainly Grecian, but the artist-architect expressed his knowledge of styles and of their kinship by adopting Roman details in parts, and by working in Egyptian forms so deftly that they are classicized by their surroundings.

The principal façade has in its centre a portal, 128 feet high and 59 feet wide, of two enormous antæ supplemented on the inside by Corinthian columns. Above the antæ is a severe entablature crowned by a pediment, and above this an attic. Right and left of this grand portal stretches a portico formed of two rows of Doric columns. These link the entrance to the angle-pavilions, the treatment of which is similar to that of the ends of the lateral frontages. The central portion of each lateral front projects, and the centre of this projection again advances as a pavilion flanked by grand columns and crowned by an attic and a pediment. The rear elevation is of noble simplicity, and is by some considered the finest part of the whole structure. An immense *avant-corps* projects considerably from the sides, at each end is a massive pilaster, and in the centre a beautiful loggia with two columns crowned by a pediment. Nowhere in the exterior, and at one spot only in the interior, has the architect permitted himself the liberty of using the arch; even the great portal is spanned by a lintel. And here is a piece of false construction: as no stone could be found to bridge the chasm, iron girders are employed and covered with plaster, so as to present the appearance of a monolith. The material of the façades is slate-blue Soignies stone, but the portal is of white stone.

The area of the building is 287,407 square feet—far larger than St. Peter's at Rome, and nearly double the surface covered by the new Law Courts at London. After deducting open courts there still remain 232,508 square feet actually built upon. The central hall, or Salle des Pas Perdus, with its galleries, vestibules, staircases, etc., covers an area of 159,311

square feet—greater than that of any cathedral except St. Peter's. As the edifice is situated upon a sloping surface, an immense platform 984 feet long has been constructed to support it. There are two hundred and seventy-two separate chambers, of which twenty-seven are large courts of justice. Perhaps the staircases are the grandest part of Poelaert's conception. From the western façade the Salle des Pas Perdus is reached by a straight flight of one hundred and seventy-one steps, measuring, including landings, 262 feet in length, and rising about 67 feet. This hall (which is on the upper or the grand floor) is reached directly from the portico in the principal façade, the staircase at this point being an external one carried across from wing to wing. Grand internal staircases lead to the same hall from the rear and western fronts; four magnificent staircases conduct from the floor of the hall to its galleries, and two others rise right and left of the main entrance. The galleries around the *salle* are nearly 20 feet wide. The courts of Assize, Appeal, and Cassation are each 92 feet by 39 feet, and differ only in their decoration, that of the Court of Appeal being richer than that of the Assize Court, while that of Cassation is sumptuous with red-marble columns with brass bases and black-marble pedestals, a richly-decorated ceiling, and walls which are green and gold above a base of black marble.

From the middle of the Salle des Pas Perdus rise the four grand piers carrying the dome, which towers to a height of 320 feet above the floor. It is here only, in the curved outline of the small cupola that crowns the pyramidal tower-like mass below it and in the arches visible internally, that the architect has allowed himself to depart from the severity of straight lines. The entire dome, viewed from the outside, consists of a square base, a series of steps, two series of Ionic columns, and the cupola.

The severity of the great hall and its accessories is extreme; there is positively no ornament. Giant staircases, plain square piers, broad surfaces unrelieved by mouldings, follow one another and lead up to the grand central feature—the interior of the dome. Perhaps at no distant date the painter's art may add the charm of color to all this, but it cannot add to the majesty.

No work of man can truly be called perfect, yet this immense structure combines the leading requirements of architectural perfection. Its great size, its commanding position, its pyramidal form, give to it a grandeur not equalled by any other modern structure and not surpassed by any ancient building. Each façade is an example of symmetrical beauty; the façades are unlike, and their differences, combined with those conspicuous in the terraced platform, with its staircases and inclined planes, yield perpetual variety to the perspective; there is everywhere visible the central cupola-crowned tower, of a mass proportioned to that of the building. The details are harmonious throughout, and horizontal lines bind the building together. Yet it may well be doubted whether the architect ~~did not~~ eschew the arch—whether the success here attained ~~would not~~ even greater had he not attempted the herculean

telled style to the varied needs of a modern building. It is not likely that the edifice will find many imitators; it is unique, and will remain so—the pride of Belgium, and especially of its metropolis.

Brussels is one of the world's first capitals, and contains many other modern buildings which, were it not for the predominating grandeur of the Palais de Justice, would be considered notable; among these are the Conservatoire de Musique and many of the structures—office-buildings, cafés, hotels, and stores—which adorn the new boulevards. The Bourse is also an imposing structure of which the Bruxellois are justly proud. It is in the prevailing Renaissance, as is New Brussels generally.

The Bourse at Antwerp is very different. It has little to show upon the exterior, since it is surrounded by other buildings, except at the entrance, but the interior court, with its gallery supported by columns with sculptured shafts and covered with a roof of hammered iron in naturalistic patterns, like the grille-work in a mediæval cathedral, is worthy of admiration. It is hard to decide whether this structure is Late Gothic or Early Renaissance, but it is certainly, with its long ranges of trefoil-headed windows and its rich carving, the most impressive modern structure to be found in Antwerp. It is the work of M. Schadde, and was finished in 1873. Another fine stone structure—perhaps the finest erected since the Bourse—is the Banque Nationale of M. Beyaert, built in the French Renaissance of the sixteenth century. The Palais de Justice is a fine building of brick with stone dressings, and would be esteemed grand did it not come into comparison with its giant neighbor at Brussels.

Antwerp, even in its newer portions, is less Parisian than Brussels; more of the old Flemish element subsists, evidenced by Gothic and transitional lines and details in the newer houses and commercial structures, and by the extensive employment of brick. The Stuyvenberg Hospital at Antwerp has circular isolated hospital wards—a system which seems to work well, but has not been imitated to any great extent.

The New Art-museum at Amsterdam is one of the very few large public buildings erected during the century in Holland. It is a well-proportioned pile of ample dimensions, but the exterior does not in any way suggest an art-museum. It is not in any phase of the national styles, but masquerades in a nondescript Gothic, though with some details that recall old work. The materials are brick with light stone trimmings and a granite base. What looks like the entrance is a double driveway through the building. The interior arrangement is a decided success.

The Vienna Rathhaus.—Architectural activity does not seem to have subsided at Vienna. The Rathhaus—Friedrich Schmidt's masterpiece—is now complete. Its Gothic is as unlike that of Street's Law Courts as possible; as Schmidt himself is said to have remarked, it is full of the modern spirit. There is about it that palatial spaciousness that can-ings of mediæval times except the ct of space was gained more by the y small parts than by the immen-

sity of the few. It is this spaciousness, coupled with a symmetry never found in the mediæval Gothic, which makes Schmidt's Gothic less pure than that of Street, and takes from the *ensemble* all that picturesqueness which lives in every line of the Law Courts. All the mouldings are Gothic, the windows have their tracried heads, the arches are all pointed, pinnacles and canopies of the most Gothic cut are scattered around, and yet the Rathhaus, with its well-preserved horizontal lines, its regular ranges of arches and windows all alike, and its palatial air, seems Renaissance, and, in fact, is but a Renaissance structure with Gothic ornament. If this makes the Gothic impure, it renders the building more consonant with the spirit of the age. It is an enormous edifice, surrounding seven court-yards, with open arcades on the ground-floor, an imposing loggia, and a steeple which is almost as high as that of St. Stephen's, yet seems small and fails to break up the monotony of the façade (*pl.* 52, *fig.* 3).

The Hungarian House of Parliament, at Buda-Pesth, has claims to be considered among the notable buildings of the day. It is in the Gothic style, and in some respects recalls Westminster Palace, London. The length of the building is 853 feet; the depth, about 377 feet. The *Salles des Séances* of both the Senate and the Representatives have panelled ceilings with a profuse display of moulded ribs and open-worked bracket-trusses in woodwork. They are lighted chiefly by a range of broad wheel-tracried, tripartite clere-storey windows, each occupying an entire bay. Below these a range of arches surrounds a gallery and simulates a triforium. The lowest tier of arches in the Senate-hall is segmental, each arch spanning a bay, while in the Hall of Representatives each bay contains three pointed arches.

The New Fondaco dei Turchi at Venice—also called *Ca (Casa) Pesaro*—which exists to-day is not the building which a few years ago bore that name. A noble ruin, it might have been preserved; but the Venetians were not satisfied with this: they must have a new *Fondaco dei Turchi* (Warehouse of the Turks), and it must be a museum. So the ancient building was razed and rebuilt—certainly, as far as possible, with the old materials and in outline, according to the best authorities; but every shaft was scraped and a marble facing put over the entire structure.

The Duomo of Florence.—The new marble façade of the Duomo of Florence (Santa Maria del Fiore) was begun in 1875 from the plans of Emilio de Fabris, professor of architecture in the Academy of Fine Arts at Florence. The original façade was begun by Arnolfo, but in 1332 his successor, Giotto, designed a more imposing plan, which he did not live to see completed. This work was removed by Buontalenti in 1588 with a view to replacing it by a new façade, but the project was not carried out. Between 1515 and 1561 temporary façades of painted wood and of linen, and in 1688 a frescoed façade, were erected. De Fabris died in 1883, and the work was completed from the designs and under the superintendence of Del Moro, and was unveiled May 12, 1887, ~~under~~ *ix* hundred years after the laying of the foundation-stone.

AMERICAN ARCHITECTURE.

I. ARCHITECTURE OF THE AMERICAN ABORIGINES.

THE descent and the immigration of the aborigines of the American continent, and the investigation of its oldest culture, have exercised science scarcely to a less extent than similar questions concerning the prehistoric peoples of Europe. This, at least, seems certain—that even in the earliest times they had communication with the Old World. On the Taunton River, in Massachusetts, upon a block of gneiss—the much-discussed Writing Rock or Dighton Rock—a Phœnician inscription is alleged to have been found whose purport is assumed to be that In, son of Indios, king of Atlantis, was sent to America (in 1800 B. C.) to conclude a treaty of commerce.

Mound-builders.—A series of ruins have been discovered which prove that powerful races must have inhabited the country before the days of the modern North American Indian. At Chillicothe, in Ohio, are fortifications which cover over one hundred acres, and which are surrounded by a wall 20 feet thick and 12 feet high, with a ditch 20 feet wide. Another has a sort of covered-way. A series of such fortifications, some rectangular, others round tumuli of earth—some of which are 100 feet high—mine-shafts, cromlechs, and balancing-stones, cannot have been the work of the Indians who were discovered by the Europeans at the end of the fifteenth century.¹

America also has its ancient history; over the land there have passed waves of population, contending, subduing, forming states and destroying them, and leaving behind traces the careful examination of which to-day engages the attention of investigators. For our purpose, however, only a small portion of this broad continent is of interest, since only the monuments of the southern extremity of North America are of such a grade as to fall within the scope of Architecture, although the principles of correct tectonics did not constitute the leading attributes of the peculiar expression of form developed there. But the Mexican structures which come within the range of Architecture do not go back to a very high antiquity.

Aboriginal Peoples.—In the most ancient times to which indigenous traditions refer, various races dwelt in the Mexican Andes. The Olmeks, the most powerful of these, dwelt on the Plateau of Tlascala, and thence spread to the Gulf of Nicoya and to Leon de Nicaragua. The Toltecs

¹ For the question of the origin of the native Americans, see Vol. I. p. 211 and Vol. II. p. 56; see Vol. II. p. 75; for Mound-builders, see Vol. I. p. 215, *pl.* 39.

came (544 A. D.; comp. Vol. II. p. 88) from the North; about one hundred years later they established their domination in Anahuac, the sacred mountain-land of Mexico. They had a powerful civilization. In the beginning of the eighth century was composed the "divine book" in which their history, mythology, and laws were set down. Among them came the great founder of their religion, Quetzalcoatl, who had a white complexion and a beard and was attended by many strangers clothed in sacerdotal garments of black. In the middle of the eleventh century the Toltecs wandered farther southward, and their place was taken by the Aztecs, whose capital, Tenochtitlan, was founded 1325 A. D.

In Peru, at the end of the eleventh century, there appeared a stranger, Manco Capac, the founder of the kingdom of the Incas and of their religion, which, like that of the Mexicans, made the sun the highest divinity. The empire of the Aztecs and that of the Incas, together with their culture, which was in a condition to execute immense monuments, existed only about four hundred years until the Spaniards under Cortez and Pizarro conquered the countries and rapidly annihilated both people and culture. Dense wildernesses soon surrounded the ruins of the once great cities, which were lost to sight until, about a hundred years ago, science commenced to take some interest therein, and the axe opened a way through the luxuriant vegetation which in that tropical climate had in a few centuries grown into thick forest.

It cannot at present be proved that the course of development of this series of edifices was peculiar. Whether, also, this architecture had its origin in wood-construction cannot by a consideration of its fantastic details be directly negatived, but the mound of earth and the stone building erected upon it form here the cradle of development, even as among the races before treated of. We may distinguish the simple Toltec from the fanciful Aztec structures.

Architectural Remains: Palenque.—As the oldest monuments are Toltec, it is believed that those of Palenque—a city the circuit of which is assumed to have formerly been six or seven leagues—must be attributed to them. The more important edifices are all raised upon terraces which are oriented with exactitude. The largest of these stands upon a terrace 60 feet in height, formed of stone, lime, and sand, and covered with polished slabs. On this base rises a nearly square structure, a palace of many rooms, the ceilings and roof of which were formed by corbelling. This edifice stands at the foot of the highest peak of the chain which divides Guatemala from Yucatan. A four-storeyed tower which may probably have had formerly a fifth storey rises in the centre of the palace. The exterior walls, which receive the piers between the great window- and door-openings, are decorated with sculptures executed in fine stucco. The floors are also laid with polished stucco.

Ruins of Mitla.—Great antiquity is ascribed to Mitla, which yet, so far as sketches and photographs go, belong to Aztec times. It is belie



Mitla.
just

palaces of which were the burial-places of the kings. The masonry of the principal palace is composed of earth, lime, and sand, upon the surface of which were embedded small stones set so thickly that no spaces were visible between them. These form a geometrical pattern in relief (*pl. 54, fig. 8*).•

Teocallis.—The sacred edifices, or teocallis, are pyramids to whose platforms lead steep staircases of ample width. One of the most richly-ornamented works of this kind, the Teocalli of Xochicalco (*fig. 2*), is, unfortunately, only partially preserved. Above the substructure—which, as shown in our illustration, is covered with wrought stone—there formerly rose, if the attempted restoration is correct, four other storeys. The still-remaining portions show traces of coloring, chiefly red. At Papantla, in the State of Vera Cruz, is a teocalli of seven stages (*fig. 1*); another is that of Tuspan (*fig. 4*), which consists of a tower-like, but not lofty, structure mounted upon a pyramidal base. The Teocalli of Tehuantepec (*fig. 6*) has convex sides. The latest and most fantastic manifestation of the Mexican style is exhibited by the structures at Uxmal (*figs. 5, 7*) and Labnah (*fig. 3*), in Yucatan, especially on account of the frequently-recurring grotesquely-contorted faces of men and beasts, in which a proboscis-like nose projects freely from the building between a grinning mouth set with teeth and two rectangular eyeholes. (See Vol. I. p. 43.)

The Buildings of Tenochtitlan—the present Mexico—seem to have included similar fanciful works, according to the accounts sent to Charles V. by the first Spanish conquerors, who speak of a wall called *coatepanlli*, or “serpent-wall,” from its sculptured serpents, and of the portal of a small round temple which was built in the form of a serpent’s mouth. The chief teocalli was a pyramid of five stages reaching to a height of 35 metres (115 feet). The platform was reached by an immense staircase of one hundred and fourteen steps on the south side; two towers stood upon the platform. About forty smaller temples surrounded this large one, and were by means of the above-mentioned serpent-walls included in a rectangular sacred temple-enclosure. Four gateways, forming towers similar to those of the Hindu temples, led from the centre of each side to the four principal streets of the city, which contained two thousand temples, with three hundred and sixty towers.

The Huitzompan, or “skull-pyramid,” was a singular structure, where the skulls of the sacrificed by tens of thousands were skewered on cross-bars or built into towers. It is said that in one of these edifices the companions of Cortez counted one hundred and thirty-six thousand skulls of prisoners of war who had been offered in sacrifice to Huitzilopochtli, the god of battles.

The King’s Palace had two towers, and was surrounded by a park, in the centre of which was a zoological garden, the animals being confined in pens divided by walls. Twenty gateways led into the palace, by small courts, in one of which was a

fountain. A hundred chambers whose walls were covered with marble and flagstones, and whose ceilings were formed of finely-carved beams of cypress and cedar, surrounded the courts. Three hundred men could sit in the great hall. The conquerors were dazzled by the fantastic magnificence and by the splendor which beamed around them. The story of the overthrow of this magnificence does not fall within our scope.

The Buildings of the Incas in Peru have not the importance of those of the Aztecs. It is sufficient to mention their ramparts, whose mighty blocks, often above 10 metres (33 feet) long, excited the admiration of the Spaniards, since, though unhewn and without mortar, they were as firmly fitted together as though they were one original undivided mass.

Toward the north of Cuzco, on a rugged eminence, rose a strong fortress the remains of which at the present day by their vast size excite the admiration of the traveller. It was defended by a single wall of great thickness and 1200 feet long on the side facing the city, where the precipitous character of the ground was of itself almost sufficient for its defence. On the other quarter, where the approaches were less difficult, it was protected by two other semicircular walls, of the same length as the preceding. They were separated a considerable distance from one another and from the fortress, and the intervening ground was raised, so that the walls afforded a breastwork for the troops stationed there in times of assault. The fortress consisted of three towers detached from one another. The hill was excavated below the towers, and several subterranean galleries communicated with the city and the palaces of the Inca. The fortress, the walls, and the galleries were all built of stone, the heavy blocks of which were not laid in regular courses, but so disposed that the small ones might fill up the interstices between the great. The several blocks were adjusted with so much exactness and united so closely that it was impossible to introduce even the blade of a knife between them. Many of these stones were of vast size, some of them being full 35 feet long, by 15 broad, and 6 feet thick" (Prescott).

Two great roads—the one on the seacoast, the other from the coast to the mountains—had a breadth of 12 metres (39 feet) and a length of 500 leagues. The mountain-road, which broke through cliffs and passed over hollows, was walled on both sides and had outlets for water; it was provided at intervals with hospices. Aqueducts of great length traversed the country.

The Temples of the Peruvians were built of sun-dried bricks and shone with a wealth of the precious metals; remains of stone temples, palaces, and other buildings still exist. Of the Temple of Viracocha, south of Cuzco, it is related that it had two storeys and enclosed within a chapel a stone image-column of the god, which was so much in the European manner that the Spaniards believed it to be a figure of St. Bartholomew. The style of the buildings preserved to us, judging from the few that remain, has nothing of the fanciful, and was not surprisingly different of temperate Europe.

II. ARCHITECTURE OF THE EUROPEAN RACES IN AMERICA.

I. MEXICAN ARCHITECTURE.

The history of Architecture in the New World, if fully and properly treated, is by no means confined to that of the structures erected by the English-speaking races of the continent. Long before anything worthy the name of Architecture existed in the United States the proud and wealthy Spanish colonists had raised in their cities grand cathedrals and extensive municipal structures, besides convents, markets, baths, houses, etc., which are well worthy the intelligent study of the prouder Northern race that now leads both in wealth and in energy. Even at the present day it may well be doubted whether there are in all America any buildings equal in grandeur to the finest of the churches and cathedrals of the Spanish colonies. It is true that the best period of the Spanish Renaissance had passed before the colonies had become sufficiently rich to erect structures worthy to be compared either in size or in beauty with those of the parent-country. The decadence had commenced, and thus the ornamentation of the best churches is more or less *baroque*, while the worst descend very low into the depths of "*Churrigueresco*." Josef de Churriguera was an architect who in his day, like many bad architects, was successful—so much so that his name is a synonym in Spain for pretentious tastelessness.

The architects of New Spain, whether their detail was good or bad, understood thoroughly the art of massing it so as to give it the greatest possible effect. They comprehended the architectural value of broad plain surfaces contrasted with smaller adorned ones, and their great churches present us with some startling combinations of this kind. It is principally upon this account that the architecture of Mexico and of South America deserves a greater amount of study than has heretofore been accorded it. The chief elements of grandeur and of picturesqueness—which is to grandeur what prettiness is to beauty—are derived from the distribution of the masses, and are independent, in most cases, of what is known as style. Though the edifices of Spanish-speaking America are all conceived in various phases of that compromise between the round-arched and lintelled styles—that union of a screen of orders with structural piers—which has prevailed in Europe since the Renaissance, the change of their external details, and even of their internal details, into Gothic would not greatly alter the *ensemble*, provided the arrangement of the masses, the artistic contrast between the richly-decorated and the unadorned surfaces, and the outline of the whole, were left unaltered.

Mexico is not only the nearest to the United States of the Spanish-speaking countries, but is also architecturally the most important, and must occupy the greatest share of the space at our disposal. Throughout the whole of the past history of Mexico ecclesiastical buildings have predominated, as might be expected in a country colonized by a race which

equally with sword and with crucifix.

100.—Among the earliest of these churches, as

it is also among the few that now stand practically as left by their builders, is San Francisco at Tula, begun about the year 1540 by Fray Alonzo Ranzell, the first missionary among the Indians of that region, and completed not later than 1561. In appearance it is more like a fort than like a church, since its ponderously-built walls are guarded by flanking-towers and it is enclosed by a heavy stone wall fourteen feet high.

Merida Cathedral, completed in 1598, is another work of the sixteenth century. Its lofty and massive façade consists of a centre and two square towers, each of three diminishing stages set upon one another without an attempt to soften the transition. The vaulted roof is borne on sixteen massive columns. The sides of this structure are plain and fort-like, and the dome, though fine within, is externally inconspicuous in comparison with the western frontispiece.

The Cathedral of Mexico is the largest church on the continent, and is also one of the grandest. It is a broad, widespread pyramidal structure, somewhat lacking height, but full of repose. The twin-towers of the front have two ornamented storeys above a plain base, which serves as a background for the rich adornment of the portal that forms the centre of the façade. It is this concentration of the adornment which gives it grandeur. Nothing can be more severe than the plain stonework of the broad bases of the towers, and against them the narrower upper storeys and the rich entrance obtain the fullest effect. Six pairs of great scrolls form so many buttresses—flying-buttresses, it might be said—between the base and the upper part of the edifice; each tower has two pairs, while two others belong to the central part of the façade. Above the scrolls the second storey of each tower consists of five belfry-openings, four smaller flanking a larger central one, while the uppermost storey consists of an octagon inside a square. Each tower has a low bell-shaped cap which does not add to its beauty. The lower storey of the frontispiece of the main entrance is Doric, and is of better proportions than the Ionic storey above it. There are also richly-decorated entrances at the sides, and the entire round of the cornices of towers and main building is set with vases disposed at intervals upon the balustrades.

No other interior in North America so nearly approaches in vastness and spaciousness the effect of the great European cathedrals, and this notwithstanding the wooden floor, the modern altars, the debased grille-work, and the presence of the great organ and of an enclosed choir in the body of the church, so that the entire length can be seen only through one of the lower side-aisles. Twenty tall fluted columns, Gothic in proportion though Doric in detail, separate the nave and aisles, into each of which open seven chapels. The ceilings are vaulted.

This cathedral, which followed a previous church built upon the site of the *teocalli* of the Aztec god Huitzilopochtli, was commenced in 1562 and was dedicated in 1656; the architect was Alonzo Perez Castañeda. The slender and graceful lantern of the dome is

larn, and is



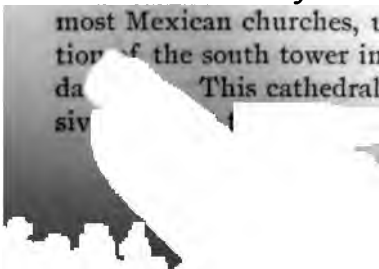
work of Tolsa. Exclusive of the very thick walls, this monumental pile measures 387 feet from north to south and 177 feet from east to west, and has an interior height of 179 feet. The towers, though they seem low, are over 200 feet in height.

Church of Chihuahua.—In some respects the great parish church at Chihuahua excels the Cathedral of Mexico. The façade is at once grandly symmetrical and picturesque. It consists of two tall towers, the broad plain bases of which form a background to the richly-adorned centre, which contains the grand portal. This centre has two superposed series of six attached columns with decorated shafts and broken entablatures. These do not appear as “constructed ornamentation,” as do the pilasters of a Roman building: they are ornamented constructive parts of a screen of ornament which terminates above in a series of curves forming a sort of pediment to the nave. Three columns flank each side of the broad arch of the entrance, above which opens an octangular window. The ornamentation of the towers does not commence until above the level of the second series of columns of the entrance. From this point the towers rise grandly in three diminishing storeys utterly detached from the rest of the façade. Scrolls mark the transition from storey to storey, and each is pierced with two open arches on each of the sides. To the front of every pier is attached a half-column which runs up into a broken entablature, and each angle of each storey is relieved by a shorter twisted column. The side-portals of this church are also fine. The crossing of nave and transepts is marked by a dome, but this, as is usual in the larger Mexican churches, is inconspicuous beside the great twin-towers of the west front. The disposition of the decorated surfaces in this front is so good that purity of detail becomes a secondary matter.

The Parochial Church at Lagos is in its outlines similar to that at Chihuahua, but all its details are much more *baroque*. The central entrance is surrounded by a mass of decoration curved and twisted in every direction—twisted so wildly that the whole almost appears to be a piece of unconstructional Late German Gothic rather than a work of the Renaissance. The entablatures of the successive storeys of the towers also form a series of broken curves.

Belfries.—The belfries in the neighborhood of Aguas Calientes are not towers, but consist of a series of arches in a wall. This feature is tolerably frequent in Spain, and occurs in the modest building at St. Augustine, Florida, which does duty for a cathedral, but it is not common in the South of Mexico. S. Diego at Aguas Calientes has no towers, but carries its bells in series of arches which form two sides of a square. It has three low domes, but the lack of towers destroys grandeur.

The Cathedral of Puebla was consecrated in 1649, but has since, like most Mexican churches, undergone material changes, including the erection of the south tower in the last century. The main entrance bears the date 1649. This cathedral, whose rich interior adornments form an impressive severity of the exterior, with its heavy but-



tresses, seems almost a rival to that of Mexico. It is 3 by 101 feet in width. The interior is injured by the lo surround the choir, situated, according to Spanish cust of the church. The choir arch is very flat, and it is sa tect, fearing it would fall if the centres were remov unknown. The monks burned the centres, and the arc than two hundred years.

Very few of the cathedrals or churches of Mexico an generation: like those of Europe, they reflect the archite the nation. Thus, San Francisco at Querétaro, though c was fully restored and enlarged in 1727, and the fine c the end of the last century. La Concepcion in the City in the seventeenth century, was renovated in the midd century, and La Encarnacion in the same city, dedic been entirely modernized interiorly, and has altars in th vogue during the past century.

The Church of San Francisco in the City of Mexico be mencement of the eighteenth century, since it was d Though deprived of all its glories, its tower demolished, closed by a row of houses, and its interior robbed of its ments, it is still one of the most noble and imposing bui It consists of a single great nave, 56 feet wide and 230 f apse and transepts, and is lighted by a range of windows nice and the springing of the roof, and by three dor entrance is from the side, through a chapel, and by a but not overloaded, doorway.

Nuestra Señora de Guadalupe, near Mexico, was co and has a vaulted roof resting on two rows of Corint

The Sagrario Metropolitano, city of Mexico, is a wo of the eighteenth century, but in its rich Churrigueresq bear much resemblance to the unadorned style current at England and in the United States. Like many other M it underwent important repairs after the earthquake of is a Greek cross.

The Cathedral of Leon was also begun about the m teenth century, but is scarcely yet completed. It h consists chiefly of a nave, modelled after Spanish es long by 45 feet in width. This church was once that o that is, of the Jesuits or Society of Jesuits. At Guan fine church finished by the same order in 1765, and c only two years, since they were banished in 1767.

Works of Tolsa.—Toward the end of the eighteenth ce Tolsa is prominent among those of Mexican architects. is Nuestra Señora of Loreto, which has a peculiar plan, fo substituted for the minor arms of the Lat cular walls and above the main arc

considered the finest in the capital. Tolsa also executed the high altar and tabernacle in Nuestra Señora de Guadalupe and that in Puebla Cathedral, both magnificent and costly structures.

San Teresa la Antigua, notwithstanding its name (Old St. Teresa), is in great part a modern church, since the dome, vaulted roof, and apse were destroyed by the earthquakes which visited Mexico in the middle of the present century, and were rebuilt previous to 1858. The shape and proportions of the original dome of Antonio Velasquez are preserved, as are the original arches and Corinthian columns.

Public Buildings.—The Palacio Nacional is at once the largest and one of the least attractive edifices of the capital. Commenced in 1692, it has received additions at various periods, and now occupies one whole side of the Plaza Mayor, a façade of 675 feet. The national museum is housed in that portion of the national palace which was formerly the mint, and its courtyard gives evidence of the different periods at which it was built. One side has two series of round-arched openings below, surmounted by two of rectangular windows; while another, at right angles with it, consists of three broad unadorned round arches surmounted by a sort of loggia formed of bracket-capped posts bearing a cornice, the whole having an effect not unlike that of some “old-colonial” structures.

The Ayuntamiento, or city-hall, was built between 1720 and 1724, and is certainly superior to any city-hall of the eighteenth century to be found in the United States, though its details are none of the purest. There is a screen of flat pilasters in the upper floor, but in the lower the pilasters merge into piers which divide from one another a fine series of segmental arches forming an extensive portico. The pavilions at the ends, though not handsome in themselves, give by their plainness an effect of solidity to the whole.

The Biblioteca Nacional, or national library, was once the Church of San Augustin, and is in many respects a noble building.

The Minería, or school of mining engineering, a work of Tolsa, is one of the structures of which the Mexicans are very proud; it was built 1797–1813. Too heavy for the swampy site, it settled so much that at one time its entire demolition was threatened, but judicious measures stayed the work of destruction in 1830, after many of the lines had become considerably curved by the settlement. The structure cost more than a million and a half of dollars, is imposing both in size and in treatment, and contains fine courts, galleries, and staircases, as well as one magnificent hall.

The Mercados, or markets, are among the most characteristic structures of Mexico; spacious open halls with courts and fountains, they compare favorably with those of the United States. Mexico has some fine examples, and Leon and Toluca others.

The architecture of the present century for the most part follows Romance traditions. Gothic has made little headway, although a few to introduce it, as, for example, at San Miguel

de Allende, where a new façade and a central tower in the Pointed style have been added by an Indian architect.

Portales.—Many Mexican streets have what are called *portales*, or arcades, through which the sidewalks run. In the City of Mexico the chief *portales* are to be found in the Calles (streets) Tlapaleros, Refugio, and Viejo Coliseo, and in the Plaza San Domingo. The houses are two or three storeys high, and are often gayly painted. The present growth of the City of Mexico is toward the north-west, where are located the handsome suburbs of Santa Maria, Guerrero, etc.

2. SOUTH AMERICAN ARCHITECTURE.

After what has been said about the churches of Mexico, little need be added respecting those of South America, which are similar in their general style, but on the whole inferior.

Rio Janeiro has a great profusion of churches, mostly in the "Jesuit" style, and many of them striking from their size and almost barbaric magnificence. La Candelaria, a work of the seventeenth century, is conspicuous from its high towers, and Nossa Senhora da Gloria from its position upon a high hill a little south of the city. There is a cathedral, and San Francisco de Paula is another of the large churches.

Bahia has some fine buildings, among them the Exchange and the Church of Nossa Senhora, a richly-decorated structure with a façade of stone brought from Europe. The college of the Jesuits, with its contiguous church, which is also the cathedral, is one of the most remarkable buildings in Brazil.

Buenos Ayres.—The Cathedral of Buenos Ayres covers nearly a whole square; it is crowned by a large and lofty dome and has a modern portico of twelve Corinthian columns. Other large and handsome churches of this city are San Domingo, San Merced, San Francisco, and the Recoleta.

Lima and other coast-towns of Peru, though they contain many edifices of considerable size, are not built monumentally. The Plaza Mayor at Lima has on its north side the large but gloomy-looking government palace; on its eastern side, the cathedral and archiepiscopal residence, the first a handsome building of considerable extent; on the west side, the town-hall, or *ayuntamiento*; while the south side is occupied by some good private houses. The churches of Lima are numerous, and the spires and domes of the city give it an imposing appearance from a distance.

Cuzco.—In the interior of Peru, within the historic cradle of the Incas, the buildings of the Spanish conquerors are erected of enduring porphyritic trachyte or felspathic granite. The Church of La Merced ("Mercy") at Cuzco dates from 1537, and can scarcely be called a fine building, so impure are its details and so heavy is its tower. The cloisters of the convent are fine and spacious.

The Church of the Jesuits at Cuzco

façade intercalated between two plain towers, the upper storeys of which have great eye-like openings. It has no side-aisles, while the Mercy Church has a nave and aisles, and the cathedral three chief and two collateral naves. The cathedral, like the Jesuit Church, belongs to a late period; it is devoid of architectural beauty, presenting nothing but two series of semicircular-headed and ill-proportioned openings divided by two series of equally ill-proportioned pilasters. The domes are very low, and add nothing to the effect.

Arequipa.—The Cathedral of Arequipa, an imposing though architecturally barbarous edifice, was built to replace the one burned in 1849, and thus belongs to the present age. It is about 200 feet square, has a central pediment flanked by two towers, and is buttressed by eight massive Ionic columns which mount to the cornice and end above the pinnacles. The wings are a most inartistic mass of Corinthian columns bearing, Atlas-like, a heavy and blank attic.

The Cathedral of Santiago, Chili, situated in the Plaza de la Independencia, is the oldest church in the city. In 1647 it was destroyed by an earthquake, and was reconstructed subsequent to 1748. It is 351 feet long by 92 feet wide, but has no very distinguishing features. Among other ecclesiastical structures may be mentioned the Church of San Agustin, which dates from 1595; the churches of San Francisco, La Merced, and Santo Domingo, dating from the eighteenth century. On Dec. 8, 1863, the Jesuit Church of the Compañia was destroyed by fire, in which there perished about two thousand worshippers, mostly women and children.

Dwelling-houses.—The houses throughout tropical America seldom rise into architectural importance. Wood, loam, and plaster are the chief materials in the coast-towns of Peru, where the houses have usually but one floor, and the roofs are made of linen cloth or cane, rain falling but seldom along the west coast of South America. In Valparaiso the houses have storeys above the ground-floor, are not flat-roofed, and have painted piazzas; but in Santiago, the capital of Chili, one floor is usual, on account of earthquakes; yet the houses are often large, and the rooms—as, indeed, is more or less the case in all countries inhabited by people of Spanish affiliation—are set around one or more *patios*, or courts. Adobe, or sun-dried brick, is the material most largely used in house-construction throughout Spanish America, but in Rio Janeiro the houses are generally built of stone, whitewashed or rough-cast, with red-tiled roofs and projecting eaves and without chimneys. The latter are useless in the climate of Rio, but are a welcome addition to the dwellings of Buenos Ayres, which country is humid and chilly. Yet until lately the residences of this now great and increasing city were of one or at most of two storeys, and without fire-places. Recently houses of three or four storeys have been erected, provided with grates and chimneys, and English coal is used. In Caracas (Venezuela) the private houses are well built, often of brick or of marble in Spanish fashion, present bare walls to the streets, interior *patios*.

de Allende, where a new façade and a central tower in the Pointed style have been added by an Indian architect.

Portales.—Many Mexican streets have what are called *portales*, or arcades, through which the sidewalks run. In the City of Mexico the chief *portales* are to be found in the Calles (streets) Tlapaleros, Refugio, and Viejo Coliseo, and in the Plaza San Domingo. The houses are two or three storeys high, and are often gayly painted. The present growth of the City of Mexico is toward the north-west, where are located the handsome suburbs of Santa Maria, Guerrero, etc.

2. SOUTH AMERICAN ARCHITECTURE.

After what has been said about the churches of Mexico, little need be added respecting those of South America, which are similar in their general style, but on the whole inferior.

Rio Janeiro has a great profusion of churches, mostly in the "Jesuit" style, and many of them striking from their size and almost barbaric magnificence. La Candelaria, a work of the seventeenth century, is conspicuous from its high towers, and Nossa Senhora da Gloria from its position upon a high hill a little south of the city. There is a cathedral, and San Francisco de Paula is another of the large churches.

Bahia has some fine buildings, among them the Exchange and the Church of Nossa Senhora, a richly-decorated structure with a façade of stone brought from Europe. The college of the Jesuits, with its contiguous church, which is also the cathedral, is one of the most remarkable buildings in Brazil.

Buenos Ayres.—The Cathedral of Buenos Ayres covers nearly a whole square; it is crowned by a large and lofty dome and has a modern portico of twelve Corinthian columns. Other large and handsome churches of this city are San Domingo, San Merced, San Francisco, and the Recoleta.

Lima and other coast-towns of Peru, though they contain many edifices of considerable size, are not built monumentally. The Plaza Mayor at Lima has on its north side the large but gloomy-looking government palace; on its eastern side, the cathedral and archiepiscopal residence, the first a handsome building of considerable extent; on the west side, the town-hall, or *ayuntamiento*; while the south side is occupied by some good private houses. The churches of Lima are numerous, and the spires and domes of the city give it an imposing appearance from a distance.

Cuzco.—In the interior of Peru, within the historic cradle of the Incas, the buildings of the Spanish conquerors are erected of enduring porphyritic trachyte or felspathic granite. The Church of La Merced ("Mercy") at Cuzco dates from 1537, and can scarcely be called a fine building, so impure are its details and so heavy is its tower. The cloisters of the convent are fine and spacious.

The Church of the Jesuits at Cuzco is mostly noticeable for the *baroque*

façade intercalated between two plain towers, the upper storeys of which have great eye-like openings. It has no side-aisles, while the Mercy Church has a nave and aisles, and the cathedral three chief and two collateral naves. The cathedral, like the Jesuit Church, belongs to a late period; it is devoid of architectural beauty, presenting nothing but two series of semicircular-headed and ill-proportioned openings divided by two series of equally ill-proportioned pilasters. The domes are very low, and add nothing to the effect.

Arequipa.—The Cathedral of Arequipa, an imposing though architecturally barbarous edifice, was built to replace the one burned in 1849, and thus belongs to the present age. It is about 200 feet square, has a central pediment flanked by two towers, and is buttressed by eight massive Ionic columns which mount to the cornice and end above the pinnacles. The wings are a most inartistic mass of Corinthian columns bearing, Atlas-like, a heavy and blank attic.

The Cathedral of Santiago, Chili, situated in the Plaza de la Independencia, is the oldest church in the city. In 1647 it was destroyed by an earthquake, and was reconstructed subsequent to 1748. It is 351 feet long by 92 feet wide, but has no very distinguishing features. Among other ecclesiastical structures may be mentioned the Church of San Agustin, which dates from 1595; the churches of San Francisco, La Merced, and Santo Domingo, dating from the eighteenth century. On Dec. 8, 1863, the Jesuit Church of the Compañia was destroyed by fire, in which there perished about two thousand worshippers, mostly women and children.

Dwelling-houses.—The houses throughout tropical America seldom rise into architectural importance. Wood, loam, and plaster are the chief materials in the coast-towns of Peru, where the houses have usually but one floor, and the roofs are made of linen cloth or cane, rain falling but seldom along the west coast of South America. In Valparaiso the houses have storeys above the ground-floor, are not flat-roofed, and have painted piazzas; but in Santiago, the capital of Chili, one floor is usual, on account of earthquakes; yet the houses are often large, and the rooms—as, indeed, is more or less the case in all countries inhabited by people of Spanish affiliation—are set around one or more *patios*, or courts. Adobe, or sun-dried brick, is the material most largely used in house-construction throughout Spanish America, but in Rio Janeiro the houses are generally built of stone, whitewashed or rough-cast, with red-tiled roofs and projecting eaves and without chimneys. The latter are useless in the climate of Rio, but are a welcome addition to the dwellings of Buenos Ayres, which country is humid and chilly. Yet until lately the residences of this now great and increasing city were of one or at most of two storeys, and without fire-places. Recently houses of three or four storeys have been erected, provided with grates and chimneys, and English coal is used. In Caracas (Venezuela) the private houses are well built, often of brick or stone, and usually, in Spanish fashion, present bare walls to the streets, the apartments surrounding interior *patios*.

III. ARCHITECTURE OF THE UNITED STATES AND CANADA.

I. THE COLONIAL PERIOD.

The architecture of the New World is an echo of that of the West of Europe. When the great continent was discovered, the Renaissance was in the fulness of its power, but the growth of the new colonies was too slow to permit of the erection of numerous buildings at that date. This was the case even with the earlier Spanish colonies, whose older cathedrals and large buildings for the most part bear the stamp of the *baroque* decadence. Still more is this the case with the structures built during colonial days in what is now a part of the United States.

The Earliest Structures of the British colonies were contemporaneous with the Stuarts in England, but those were the days of constant struggle for a bare existence, and such structures as Governor Henry Bull's house at Newport, Rhode Island, "Captain Kidd's" house at Conanicut, and the Cradock house, or "Old Fort," at Medford, Massachusetts, have an antiquarian rather than an architectural interest, though they are substantially built. The dwellings of the seventeenth century—in New England, at least—had the chimneys and gable-ends nearly always constructed of stone, while the sides and ends above the line of the roof-plate were framed of heavy oak rudely squared and covered with coarse stucco and split shingles, as in Governor Coddington's house at Newport, Rhode Island. In the parts of Pennsylvania which are situated upon the easily-split Archæan schists, stone was the usual building-material, and has continued to be so in the country districts of Eastern Pennsylvania, though in the cities it is superseded by brick.

Eighteenth Century.—Later on, in the first quarter of the eighteenth century, the dwellings of New England were constructed almost entirely of framed wood covered with thick clapboards with beaded edges, and brick began to take the place of stone in the chimneys. At this period the gambrel, or broken-backed gable, came into use, and continued in favor for a hundred years or more.

Gambrel Roof.—The advantage of this form of roof is that it secures lofty and well-shaped rooms, while providing also a loft above—features which it shares with the mansard, or French, roof. It is, in fact, a mansard on two sides of the house, terminating in a gable with two different rakes at each end. The gambrel was fully accepted as an architectural feature and adorned with dormers and a cornice, as in the Banister house at Newport, Rhode Island. The hipped roof also came in at about this time, but the earlier examples were only partially hipped at the ends, the upper portions of which stood up as small gables.

The Colonial Dwelling-house of the better class was, after the first part of the eighteenth century, often constructed of brick, but even then the mouldings and cornices were invariably of wood. The entrance had usually a pilaster on each side, with an entablature and a pediment above, while the projecting eaves had a wooden cornice often adorned with

dentils and modillions, and the roof, often hipped, was low-pitched. Many even of the larger houses in New England continued to be built of wood, but in Philadelphia brick, usually laid Flemish bond—that is, with alternate headers and stretchers, the former often distinguished by their black color, and thus forming a pattern in the red brick—was the common material.

Throughout many parts of Eastern Pennsylvania stone, as has been said, was in common use, either left rough or more commonly covered with plaster. Quoins in brick, stone, or plaster were usually continued down the main angles. A projecting pent-house, or miniature roof, flat-ceiled, was a favorite addition to the lower floor of the plain but substantial country houses. The roofs were usually shingled; there was often a seat on each side of the doorway. The plan of the colonial house of the better class was extremely simple, consisting in the main of a hall ten or twelve feet wide, with an ample staircase on one wall, and of two square rooms opening from each side of the hall. The staircase was the most elaborate part of the house, and the hall, as well as the principal rooms, was panelled to a moderate height. Sometimes the parlor was wainscotted from floor to ceiling, but more often the chimney-piece only was panelled to the ceiling.

The words of Thomas Jefferson, though they may not reflect the views of modern admirers of "old colonial," are nevertheless a tolerably exact picture of the state of Architecture at the latter end of the last century and the commencement of the present: "The private buildings are rarely constructed of stone or brick, much the greater proportion being of scantling or boards plastered with lime. It is impossible to devise things more ugly, uncomfortable, and, happily, more perishable. There are two or three plans, on one of which, according to its size, most of the houses of the State are built."

Colonial Architects.—Architecture was, in fact, unknown. There were no architects save here and there an Englishman or a Frenchman, and builders worked according to the remembered traditions of their trade, modified by circumstances and materials. Churches, town-halls, and other places of public assembly were either mere boxes according with Puritanic ideas, or they were based upon reminiscences of the work of Wren or of his inferior successors, Gibbs and Hawksmore.

Cornices, architraves, string-courses—even columns and entablatures—were executed in wood; but, thanks to the fact that mill-work had not yet acquired supremacy, some of the carving was executed with much spirit, as may be seen at the old Walton house, Pearl Street, New York City. The interiors were often adorned with a considerable amount of carving; the chimney-pieces especially exhibited the rococo work of the style of Louis XV., and of the Adam brothers and their contemporaries in England. The old houses of Germantown, now a part of Philadelphia, abound with examples of this class of work.

In New York the earlier houses partook more or less of Dutch charac-

teristics, and some of the peculiarities of the Pennsylvania counties came from Germany; but English influence conquered, and the architecture of the United States became a reflex of the country which furnished a majority of its citizens.

The United States of the present day does not consist alone of the original English-speaking States, but includes also a State which was formerly French and several which once were Spanish. The architecture of these States before their admission into the Union had nothing in common with that of New England.

Early Ecclesiastical Structures.—California still has a series of mission churches, massive and plain, constructed of adobe and similar in style to the smaller and later ecclesiastical structures of the adjoining republic of Mexico, of which country it originally formed a part. Among these churches may be mentioned San Gabriel, San Clemente, Santa Barbara, Monterey, and the Mission Dolores at San Francisco. Though they are but works of the last century, these plain edifices, with their small windows, broad buttresses, and low bell-turrets, in which the bell is visible, surrounded by quiet graveyards, and set in the midst of the quaint piazza-fronted adobe dwellings of the diminishing yet still existing Spanish Californians, breathe an air of great antiquity and speak of a quiet and repose now for ever banished. At Monterey the court in front of the church is paved with whales' vertebræ. Santa Fé, the capital of New Mexico, is the second oldest city in the United States, having been founded by Spanish settlers in 1581. Its older portions consist, like Monterey and other Spanish towns in California, of houses of adobe or sun-dried brick, usually of one storey. It contains two Roman Catholic churches. Tucson, Arizona, is another Spanish adobe town, and its Church of San Xaver is a remnant of the old régime. St. Augustine, Florida, founded in 1564, is a few years older than Santa Fé, and wears an air of great antiquity from its narrow streets, its balconied houses, its fort and churches built of the shell-conglomerate known as *coquina*. The cathedral is an unpretentious structure with a façade consisting of a gable with curved lines surmounting a plain lower storey, in which is set an entrance with two half-columns on each side. The bells hang in semicircular-headed openings in the gable.

The Cathedral of St. Louis (*pl.* 55, *fig.* 1), a large structure with a finely-proportioned and impressive façade, is the most notable of the older edifices of New Orleans. Above the tall centre of this façade rises a tower crowned by an octagonal spire, while on each side an octagonal spire crowns the angle-turrets of the municipal buildings which form the wings of the front. The cathedral occupies most of the width of Jackson Square, which is beautifully adorned with shrubbery and flowering plants and with the fine equestrian statue of Andrew Jackson, by Mills.

Progress of Colonial Architecture.—The colonies grew in population and riches, and the seaport-towns especially attained importance. Boston and Newport in New England, New York and Philadelphia in the Middle

States, became centres of wealth, and more ambitious dwellings were erected, while State-houses and other public buildings rose on all hands.

Dwelling-houses.—No city exhibits more or better examples of the colonial style than Newport, Rhode Island, once second only to Boston among New England seaports. Unarchitectural though the best of these structures may seem to those who have been accustomed to revel among the architectural beauties of all ages, it must be remembered that the colonists of the eighteenth century possessed but limited advantages and were confined to the use of a few forms by what would now be considered a lack of both money and materials. The old house on Broad Street, the Gibbs house, the Hazard and Vernon houses, are examples of Newport colonial dwellings. The exteriors were strictly symmetrical plain square blocks, with an entrance in the centre and rectangular windows on each side; and this description will apply equally well to colonial dwellings generally. But the interiors had stately centre halls and staircases and rich ornamentation marked by delicacy and refinement—only the ending of the *rococo*, it is true, but in execution vastly superior to the “American vernacular” which succeeded it. Entrance-doorways, at Newport as at other cities, had usually a pilaster on each side and a broken pediment above the entablature. Sometimes, as in the Ayrault house, a half-dome pent-house is borne above the door on consoles, and this may be fashioned into a huge shell, as in the Fairfax house.

Public Buildings.—The State-house at Newport is a perfectly symmetrical brick and stone structure commenced in 1738. It has rectangular windows with quoins, a balcony over the entrance, above the balcony a broken pediment, and over this a truncated gable. Over all rises a low octagonal turret. The city-hall, or “Old Granary,” is more classical, for its architect, Peter Harrison, had been a pupil of Vanbrugh, and had worked at Blenheim and Castle Howard. It has Ionic pilasters running through two storeys placed above a ground-floor with large round-arched openings. The Redwood Library (Roman Doric, with four columns and triglyphs on the frieze), the Malbone house (burnt in 1766), and many other structures at Newport and elsewhere, were the work of Harrison, who also built King’s Chapel at Boston (1749), a massive church with a fine interior and a low peristyle of Ionic columns. The old State-house at Boston is of the same period; it is a very plain structure with a wide entrance and curious end-gables.

Independence Hall (*pl. 60, fig. 2*) is a relic of colonial days. Commenced in 1732, it was from 1736 to 1799 the seat of the legislative assembly of Pennsylvania. In style it resembles the buildings of England of the same epoch—that is to say, it gives evidence of an utter decay of the classic style, unwarmed by the touch of any coming revival. Wooden cornices and modillions, with some Ionic capitals, show that a memory of classic detail still subsisted, and the Doric pilasters and triglyphs of the interior give further proof of this. Yet Independence Hall, with its square tower, is a substantial business-like structure, and in its day was

doubtless considered grand. The wings are later additions, and are decided disfigurements, since they give the façade a disproportionate lowness from which the original hall was free. Even from an æsthetic standpoint this building, and the churches of the colonial period which still exist, are superior to many of the structures built in the interim between that period and the present age.

National Capitol.—The War of Independence exhausted the country, and thus, when it was resolved to build at Washington a Capitol which should be a fit domicile for the Federal government, the poverty of architects was severely felt. The designs presented were chiefly picturesque sketches, even those of Dr. Thornton comprising neither ground-plan, geometrical elevations, nor sections. The authorship of the original design was disputed between Thornton and Stephen L. Hallett, a Frenchman, and the former was finally set aside. The Capitol as it now stands (*pl.* 58, *fig.* 2) belongs chiefly to the nineteenth century (see page 363), and its classicism struck the keynote which has since been sounded by most government buildings.

The White House is exteriorly a not unimposing structure for its time, but it is little else than a duplicate of an Irish gentleman's country-seat, and has not always been considered particularly convenient by the Presidential families that have occupied it. Its architect was James Hoban, an Irishman who succeeded Hadfield, the successor of Hallett, as the architect of the Capitol. Its large projecting portico seems scarcely to belong to the rest of the structure.

The State-house at Boston, designed by Charles Bullfinch, is contemporary with the older building of the Capitol. It is of simple outline, a rectangle with a projecting centre, and is crowned by a hemispherical dome. The centre has unadorned round arches in the lower storey, while the upper consists of a Corinthian colonnade surmounted by a pediment. The wings are plainer (*pl.* 60, *fig.* 3).

Churches: *St. Michael's* at Charleston, South Carolina, is the work of Gibson, a pupil of Sir Christopher Wren. As is the case with most of the churches of the time, whatever ornament there is is reserved for the steeple, the three stages and spire of which still constitute one of Charleston's chief ornaments. There is a Doric porch-front, and the pilasters of the sides run past two storeys of windows.

Christ Church.—Philadelphia, from the first a city of brick, contains, among other less important structures, two which must be mentioned here, besides numerous houses of the last century which the lover of good solid brick-work well and properly bonded would in these days do well to study. The old Quaker City kept close to the Delaware, from which modern Philadelphia has diverged to the west and the north. *Christ Church* (*pl.* 55, *fig.* 2) is a favorable specimen of a colonial church, for, though most of the cornices and mouldings are of wood, the string-course along the sides between the two ranges of windows is of moulded brick, and the entablature, archivolt, etc., of the eastern window are of brown-

stone. The double row of eight arches along the sides has a good effect. The tower was commenced in 1727, the church was built immediately after, and the spire with its octagon lantern was added later. Urn-like finials adorn the attic and the east end.

The Old South Church, Boston, now used as a museum, belongs to the colonial period; it is a plain brick structure with a ridge roof and square tower surmounted by a spire which has a sort of loggia around its base.

2. THE NINETEENTH CENTURY.

Those who study the remains that have come down to us from ancient and mediæval times are often tempted to think, and even to assert, that Architecture now is a degenerate art—that, whereas the civilizations of old had styles of their own, we have none, and that in this utilitarian age we never take the time or unite in the effort necessary to execute great works equal to the temples of Egypt, Greece, or Rome, to the amphitheatres, baths, and basilicas of the last-named city, or to the grand cathedrals of the Middle Ages. There is some truth in the allegation, but much of error. The world has now but two great civilizations—that of Europe (to which America's belongs) and that of Eastern Asia. The latter has its own style and is far behind its Western competitor. The civilization of Western Europe tends to become cosmopolitan; it has conquered America and the East Indies, and, while accepting some decorative hints from Japan and China, bids fair to conquer them also. It is impossible now, in this age of steam and of electricity, to keep any style or manner pent up in its original home: the irruption among us of Japanese decorative *motifs* is enough to teach us this. If the modern age is to have a style, it will be a universal one. It is true that such a style has not as yet developed, but this is because our present cosmopolitan civilization is too modern to permit of its formation.

Revivals of Styles.—It is customary to think of the end of the fifteenth century as the commencement of the modern age, but the present century since the end of its fourth decade has seen changes far greater than those which marked the end of mediævalism. The Renaissance was the revival of the classic, and was naturally succeeded by "revivals" of other styles, including a revival of itself. Since the requirements of the sixteenth century were more similar to those of the present age than were the requirements of any previous age, it was perceived that the points of difference between the Renaissance and the classic were precisely those which made the former more applicable to modern uses. But new wants kept constantly cropping out, and the styles of architecture employed have had to be adapted to them. Notwithstanding all the re-use of various phases of ancient ornament, the purpose of the building and the constructive necessities of that purpose have impressed themselves on the exterior as well as on the interior.

Decadence of Imitation.—All the best buildings of the present age express their purpose. The bank, the office-block, the railway-station, the

picture-gallery, the warehouse, have features as distinctive as those of the church and the dwelling-house. Upon all these classes of buildings there is evident a general tendency to use ornament freely, to mix the various styles somewhat, to take what suits and to let the rest go. On all these structures the larger features are characteristic, and not even the purposeful imitation, for example, of the five orders of Rome can make a five-storeyed warehouse or block of stores look like a Roman temple or amphitheatre. This deliberate imitation of the orders is becoming every day rarer. The abandonment of the false screen of pilasters and entablatures marked the change from the ancient to the mediæval styles, and its abandonment now is a step toward the formation of a modern style.

Modern Progress.—The new advance, the age of steam and electricity, is less than half a century old, and never in the world's history has a style been formed in that space of time. The multiplicity of kinds of buildings and the vast amount of material that is available make the progress toward a definite modern style slow, but nevertheless it is sure. The charge that grand works are not now executed cannot be accepted. It is true that the great works of the present age are not so grand in proportion to the numbers and wealth of the community as were those of former ages, because both numbers and wealth are vastly greater than in olden times, and also because entire communities are not now, as in the days of the temple- and cathedral-builders, possessed by one spirit and one idea, but by many. Yet edifices as grand as those of ancient times, and utilitarian works far grander than they, are now erected. If the modern church is not equal to the mediæval one, the "city-hall," "Palais de Justice," or "Rathhaus" is more magnificent than its ancient representative. Paris, that finest of all cities, can set the new Louvre and the opera-house against Notre Dame; London has its Law Courts, its Westminster Palace, its Albert Hall, and many other great buildings of the past fifty years to oppose to the Abbey of Westminster, which was the slow work of centuries; and so with other cities.

Characteristic of Modern Architecture.—Yet the great characteristic of modern Architecture is not the execution of a few grand monumental efforts, but the application of architectonic principles to all classes of structures. The gradual advance of the successive civilizations of the world is marked by the continuous increase of the number of classes of buildings which rose into architectural importance. Egypt has its temples and tombs, with a few remains of palaces; Nineveh and Babylon have left their palaces, with some remains of temples and tombs; but scarce a remnant of anything unconnected with king or priest has come down to us from either of these fluviatile civilizations. Greece, mistress of the inland sea, gives us a greater variety, and shows us a people as well as a ruler and a religion; the theatre and the *agora* make their appearance. Rome, full ruler of all the countries surrounding the great Mediterranean and its subordinate seas, has left us basilicas, theatres, amphitheatres, triumphal arches, immense baths, bridges, and aqueducts,

as well as substantially built private houses, in addition to temples, palaces, and tombs. The Middle Ages, sombre and barbarous though they were, were yet full of life; and though for one or two centuries the cathedral and the castle seemed the architectural sum-total, yet long before they terminated municipal buildings of various classes were to be found in every city and private dwellings had risen into importance.

Classes of Modern Buildings.—The list of classes of buildings required in modern times would be a long one. Few structures save the smallest are now without architectonic pretensions. Bridges, docks, quays, water-works, gas-works, etc., have usually their architectural parts or features; factories often rise into the domain of Architecture, and yet more frequently is this the case with warehouses. Legislative halls—national, state, and city—mints, treasuries, post-offices, courts of justice, museums, picture-galleries, railway-stations, banks, office-buildings, exhibition-buildings, insurance-offices, churches, schools, universities, schools of fine arts and music, lecture-halls, theatres, hotels, hospitals, asylums, and vast retail and wholesale stores that have become quite independent of the private dwelling, are but a few of the classes of public and semi-public buildings now required. Houses have developed into the blocks known as apartment-houses, the country and suburban residence is unlike the street-dwelling, and seaside cottages are a class apart.

In the architecture of the United States, governmental buildings seem less prominent than in Europe, and churches much less so, while office-buildings, hotels, and apartment-houses are carried to dimensions and costliness exceeding those of other countries. Ecclesiastical architecture has lost its ascendancy in these our modern days.

National Style.—It can scarcely be accounted a fault that as yet America has developed no new style; indeed, it has been impossible for her to accomplish such a feat. The people of both the Americas came originally from Europe; with them they brought their arts and their art, and all tendencies to originality have been checked both by constant intercourse with the parent countries and by a constant influx of European blood. The art of America, like its literature, has acquired very little from its natural surroundings; architects, as well as other artists, are too much given to looking backward, too little to looking around and forward. Whoever expects to find anything peculiarly American in the architecture of the United States will, therefore, be disappointed. The grandeur of the mighty rivers, deep cañons, limitless prairies, and resistless cataracts of the land finds but a faint echo in the Architecture of the people, and but little more in its literature. Art and literature alike are exotic to the *land*, though not to the *people* thereof, and are still conceived, for the most part, in the terms of the ancient environment across the Atlantic.

But notwithstanding the absence of any distinctive style that can be called "American," and notwithstanding, also, the distinct and far too prominent tendencies to imitate the mannerisms that may be in vogue in

Europe, and especially in England, the exigences of climate, the requirements of trade, changes in social habits enforced by local circumstances, and the variety of improvements demanded by the intellectual and material progress of the country have necessitated considerable change in the internal arrangements and external aspect of ordinary buildings; so that they are recognizable as American. Thus the apartment-house, though no new thing, since even in ancient Rome the *domus* was divided into many *insule*, and though present under various names throughout Europe, has in those cities of America where it has taken root—notably in New York—developed features peculiarly American.

The American hotel is in many respects unlike the European one, and stores, office-buildings, and public buildings generally, deviate widely in arrangement from European types. Yet even in these edifices that bear most clearly the American stamp the style is European. The influences of race and of that universalism of civilization that is the grandest feature of the present age have bound America to Europe with bands which she cannot break, and which check every effort to attain distinctiveness. Yet even in a purely æsthetic aspect America presents some differences from the parent-countries.

The architecture of the period immediately succeeding the War of Independence was marked by a return toward classicism (see p. 346), though it was not until the second decade of the century that the rage for Greek set in. Among the structures erected at the beginning of the present century were the City-hall of New York (which will be described farther on), Park Street Church, Boston, and, slightly later than the last, St. Paul's at New York. The first of these churches preserves most of the features of colonial times, and has a very fine steeple, the three stages of which rise gracefully one over the other. The lower storey of the tower is entirely unadorned, the flanks of the structure are very plain, and the convex entrance-buildings, which fill up the angle on each side of the tower and have pilasters running through two storeys, could well be dispensed with. St. Paul's has four distantly-spaced columns with a plain pediment at one end, while from the other rises a steeple of elegant design and good outline, consisting of several stages and a terminal spire.

From this period onward the number of important structures erected becomes so great that it would be better to classify them according to their purpose, first prefacing the descriptions with a *résumé* of the various art-movements that have made their influence felt since the commencement of the century.

The Classic Revival.—Though that remnant of the *rococo* that lingered in England until the close of the eighteenth century lingered still longer in the United States, it was in the beginning of the present century superseded by a revival of classicism. The rage for Greek which had covered England with incongruities in stone and stucco made its way to this continent, and it soon became necessary for every respectable building, public or private, to have Greek, Doric, or Corinthian

peristyles (or, at least, porticoes) of all materials, from massive stone to wood, which latter was made to imitate stone. Capitols, city-halls, churches, cottages—even outhouses—were infected by it. The Capitol at Washington, though burdened with the un-Grecian feature of a dome, was completed as a Greek temple, and for a generation all government buildings were erected after the same model. Even until very recent days government buildings affecting the Greek style have been erected, and this style is still in vogue. After having influenced all the older States it travelled westward, and there mingled with varieties of Renaissance, and with the "American vernacular" which has for so many decades been the accepted style of American dwellings.

American Vernacular.—The last traditions of the *rococo*—the broken pediments, the attenuated columns, the lengthened inter-columniations, the wooden pseudo-classic cornices—of the colonial period died away, and the Grecian revival did not reach the masses. Meanwhile, cities arose where before was wilderness, and a continually-growing population which knew naught of "old colonial" or Greek, which had no acquaintance with the Architecture of the Old World and scarcely knew even the best work of the New World, must be supplied with dwellings, and also with court-houses, city-halls, churches, and other public buildings. Under such circumstances as this new styles have arisen in countries isolated from their neighbors, and it may be asked why such was not the case in the United States. In a sense, it was the case. A manner arose which only needed more time to become a style, although a most debased one, but it was a manner devoid of all originality, for the United States was never isolated in the same sense as were the countries of the Old World before the days of the printing-press.

Vernacular Construction.—Traditions proceeding from the eighteenth century were the heritage of the artificers of the nineteenth, and a copious literature gave directions to workmen and employers. There were but few skilled architects, and these were confined to the cities; most so-called architects were but mechanics who designed in the current manner of the day. Throughout the greater part of the country—west to the Pacific, north to Maine, south to Georgia, east in New Jersey—wood was the material most used, and thus the master-carpenter became the designer of the intended structure. In Philadelphia and a few other places where clay and brick were good and cheap, frame-construction gave place to brickwork, and stone continued in use in some districts, but, while stone and brick houses were local, those of wood, with the chimneys, and perhaps a basement, of stone or of brick, were national, and still continue so, though the detail has changed.

Perhaps the greatest factor in the debasement of American structures into that vernacular of which we are far from being proud was the change from hand-work to mill-work. What carving was done in colonial days was done by the skilled workman; in style it might be poor, but the artificer put into it all he had of thought and sentiment. Machinery changed

all this. Scrolls were jig-sawed out of inch stuff, consoles built by the junction of inch pieces, mouldings run out from the planer by the thousand feet. All work became stock-work, all patterns stock-patterns; the public taste had not been awakened to demand that machinery should bring forth new forms, nor had the architect arisen to design such forms. All first-class carpentry was absorbed by the mills, and the carpenter, provided with clapboards, rustic boarding, consoles, scrolls, doors, windows, and flooring all ready-made, was simply the agent who put them together to form buildings of greater or less size and pretension. When we allow for his lack of art-knowledge and his inability to wrestle with the intricate problems of his trade, we must acknowledge that the carpenter-builder did not do so badly. He at least tried to vary his outline. Instead of adhering to the symmetrical double front of colonial days, he essayed the L-form, the recessed centre, the receding wings; he invented piazzas of almost every conceivable form; he added tiny cupolas and he adorned his roof with balustrades. But everything he essayed was marred by the sameness of detail, by motives which were for the most part of classic origin, but had degenerated into caricatures of their prototypes.

It is needless to give examples of the American vernacular: it is far from extinct, and many of us live in its productions. Neat detached clapboarded houses with piazzas and Venetian blinds compose most country towns and villages, and are abundant in the suburbs of larger places. There is nothing worthy the name of Architecture, but the manner must be mentioned in a historical sketch, since a decade ago it was that of the whole nation, except in a few large cities.

Renaissance.—When the Greek revival had spent its force in England, "Italian," as it was called there—that is to say, the Palladian Renaissance of Inigo Jones, Christopher Wren, and their followers—became prominent and held its own side by side with Gothic. This and other phases of Renaissance, including the Neo-Grecian of the second French empire, were extensively imitated in America, but always with certain peculiarities of composition which stamped the edifices erected in those styles as American. The changes brought about in the Renaissance by American architects, American tastes, and perhaps, to some extent, by American needs, converted the popular phase of Renaissance into another vernacular—the vernacular of public and large commercial buildings.

It may seem strange that English influence should predominate in the United States, when so many of our best architects have studied in France and so many German architects have extensively practised and introduced German motives, especially in the South and the West; yet such is the case, and it may perhaps be pointed to as an example of an inheritance of taste.

Many of the largest commercial buildings—banks, stores, office-buildings, warehouses—were until recently, partly on account of the need of light, but chiefly from a belief in the fireproof nature of the material,

built of iron; and these iron fronts almost always affect the Italian Renaissance, consisting of a screen of columns and entablatures placed in front of piers and round-arched windows.

Gothic.—It was natural that the Gothic movement, which gained so much greater force in England than in any other European country, should be imitated in America, which had always looked rather to England than to the European continent for guidance in architectural matters. But Gothic has never attained the importance here that it reached in England, and this from several causes. Pure Gothic—that of the thirteenth and fourteenth centuries—was even in England principally confined to churches, more because it had been the style of England's grand old cathedrals and other ecclesiastical buildings than from any inherent fitness of the style to modern purposes. Reverence for the past has kept the Church of England to the Gothic style, but its representative in America, the Episcopal Church, is a comparatively small body, and other sects have to a large extent refused to adopt a style that, though it produces impressive edifices, does not readily lend itself to the two great needs of a congregation—seeing and hearing.

Victorian Gothic.—The unfitness of the Gothic of the thirteenth and fourteenth centuries, and even of Perpendicular Gothic, for secular structures was more readily perceived in America than in England, and very few attempts were made to bring them into use; but it was otherwise with Victorian Gothic—or, as it was sometimes called here, “revived” Gothic—which, giving the liberty to use the lintel and the relieving-arch instead of tracery and pointed arches, could be adapted to commercial and private buildings. Various phases of this revived Gothic—or, at least, various manners the sentiment of which was Gothic and the details more or less so, including some of German origin—were employed to a considerable extent until the “Queen Anne” came in, and a number of Gothic motives as well as much construction and sentiment which are really Gothic have mingled with the now popular style. The half-timbered house, at present now becoming very common, finds its originals in days before the Renaissance, and the oriels, the mullioned bay-windows, even the lofty chimneys, of the modern dwelling, though they may have changed their details, are of mediæval parentage. Gothic, chiefly Batty-Langley, or “Carpenter's Gothic,” first made its appearance immediately after the subsidence of the Greek *furor*, but was improved into the Victorian manner.

The condition of Architecture in the middle of the present century, notwithstanding some good work, was far from satisfactory. All styles were practised, but few were understood. Pretentiousness was the chief characteristic of public, commercial, and private dwellings; glitter was more highly prized than refinement or originality. The public had scarcely begun to care for Architecture, still less to exercise judgment concerning it.

To the teachings of Ruskin and to the influence exerted by the works

of his followers may be ascribed the commencement of a return to the more honest use of materials, as well as many more or less successful attempts at polychromy based upon the Gothic of the North of Italy. But the architectural movement which at the present time seems to bid fair to make Architecture a national art, whether or not it gives us a national style, can scarcely be said to have set in before the Centennial.

The Present Movement.—The last decade of architectural development—and, it must be confessed, the one which has given to the United States a large proportion of its most striking buildings—has been marked by two movements, the one purely æsthetic, the other constructional in its origin, but in its results affecting the architectonic aspect of recent buildings more than it can be affected by any “style,” and tending, in fact, toward the development of a new style. The first of these movements is that which has purported to revive a late phase of English Renaissance—that of the age of Queen Anne, or, in other words, of the beginning of the eighteenth century. There is little that is worthy of imitation, little that possesses architectonic character, in the Architecture of the eighteenth century. It is that of the colonial period in America, and that of a very large part of the existing country-houses, as well as of many of the churches and much of the street-architecture in those parts of English cities which have escaped demolition and renovation.

“*Queen Anne.*”—The structures erected under the name of “Queen Anne” bear little resemblance to those they profess to take for their model, yet in common with them they have one hopeful feature: they discard the conventional five orders. While the façade of a real eighteenth-century house is a *tabula rasa*, that of the modern Queen Anne structure, whether erected for domestic or for commercial purposes, is usually a field for the display of varied shapes and varied ornament. It is, in fact, very hard to define what is meant by the term “Queen Anne,” for the modern architect has not adhered to the limited series of forms adopted by those who started the movement, but, revelling in the freedom of decoration permitted by the absence of the orders, has taken up at his pleasure motives derived from the earlier Renaissance of Italy, from the English Elizabethan, from the French Early Renaissance, and from the Flemish and German transitional and mixed styles.

Brick and Terra-cotta.—But the more important movement, the one which has done most to make modern Architecture a living art, has been the revival of the use of brick and terra-cotta. These materials were largely employed in many of the phases through which the Renaissance passed in Europe, and were also used to some extent in the Gothic, but they are not of a nature to lend themselves to the construction of the massive-looking columns and pilasters required by the Greek, Roman, and Palladian-Italian manners. Thus, when, from motives of economy, brick has been employed as a material out of which to form one or all of the five orders, it has almost invariably been covered with some kind of stucco or cement. The modern movement has discarded the cement along with

the orders, has substituted terra-cotta and moulded brick for mouldings run in plaster or stucco, and has to a large extent even replaced carved stonework with ornamental terra-cotta panels.

Iron and Stone.—The causes of this movement are twofold. The growing desire for honesty of construction, coupled with the necessity of finding some cheaper material than cut stone, has been one cause, but the other must be sought for in the purely utilitarian motive of the prevention of fire. Repeated disasters have shown that iron, though incombustible, is not fireproof, since, if wrought, it will twist and collapse through heat, and if cast, will crack the moment it is touched by water; that costly stone will scale, and even crumble, through intense heat; and that only brick and terra-cotta—materials that are the result of an ordeal of fire—will stand a repetition of that ordeal.

Timber-construction.—Along with the increased use of brick and terra-cotta there has come about also a rage for wood-construction in buildings the walls of which are of brick or of stone. The two different manners in which wood is used in recent structures show that even now the accepted æsthetic idea has not brought itself into harmony with the needs of life. On the one hand, wood is used in interior decoration in the form of panelling, wainscoting, etc.—only because such panelling and wainscoting were in vogue in Old English buildings—to such an extent as to endanger the safety of a structure intended to be fireproof; and on the other hand, wood *in mass*, in the shape of thick planks and solid beams, is coming into use as a substitute for iron in floors and roofs as a method of fireproofing. It may seem a paradox to those who are accustomed to wood as a combustible material to be told that, if properly used, it is more fireproof than iron, but such is nevertheless the truth. A wooden beam will char and yet remain sound at the heart in a conflagration that will bring down an iron structure like a house of cards.

Mill-construction—or slow-burning construction, as it is called, in which the floors are formed of thick planks laid flat and close without air-spaces between, and are supported on solid wooden beams a square foot or so in section—is coming into favor in all classes of large buildings, and has even been used in private dwellings. This mode of construction, necessitating the division of ceilings into compartments, is necessarily productive of changes in the internal finish of the structures in which it is employed.

"Free Classic."—As will be evident from what has been said, the present "Free Classic" is very free indeed. It varies from the *cinquecento* of the Italians—that beautiful free style which added delicate detail of classical origin to a round-arched style which in its main features, since the orders were absent, is Romanesque—to the stiff late-seventeenth and early-eighteenth century style of England and the "old colonial" of contemporary America on the one hand, and on the other to the half-timbered manner, full of queer gables and oriels, that has little of Gothic except the name. Two other styles—the one truly architectural, the other more

purely decorative—are at the present time exercising considerable influence in this country: these are the “Romanesque” and the “Japanese.”

Romanesque.—The round-arched styles—those which had entirely thrown away the orders and substituted therefor the pier and the buttress of small projection; those which used columns only where they were necessary, and then with a freedom unknown during the Roman Empire—have never attained to that delicacy of detail which characterized the pure Grecian or its opposite, the pointed-arch style. The style of the later Roman Empire and that of Italian and French Renaissance after the transitional period are attempts to combine the orders with the round arch, and, notwithstanding the almost universality they have attained, are really but compromises. As was shown by Dr. Essenwein (p. 290), Germany revived the Romanesque or round-arched style early in this century; England has at various times experimented with it, though the popularity of Gothic kept it in the background; but, although occasionally attempted, it has only recently been popularized in America. Its champion here was the talented H. H. Richardson, and he has been followed by others.

The Romanesque or Byzantine employed by Richardson was, however, peculiarly his own. His use of blocks of rough stone strongly contrasted with bands, capitals, etc., of most delicate detail is as far from any previous phase of the round-arched styles as modern “Queen Anne” is from that of the days from which it takes its name. But it is a round-arched style—a style with massive walls and heavy piers alternating with slender shafts and with sculptured capitals; a style for the display of the resources of constructive and decorative material—and it is becoming popular, though likely to mingle with the Free Classic which surrounds it.

Japanese.—Mention has previously been made (p. 311) of the introduction of Japanese ornament. Though the Japanese have no Architecture worthy of the name, and though their conceptions, unaided by external influences, have never risen to the monumental, the grand, nor even to the chastely and symmetrically beautiful, as ornamentalists they are unexcelled; and in playful fancy, quaint prettiness, and the art of making out of small things and inexpensive structures objects of beauty upon which the educated eye can rest contentedly the Japanese are our masters. In these matters there is no doubt that we already owe much to them. From them we are learning, not to make the objects that surround us in our homes in the form of debased imitations of grand works of art, but to treat each as an individual object for decoration and in accordance with its purpose; from them we are learning, not to make our small houses and ordinary street-structures sham copies of sections of grand palaces, but to consider each as an entity worthy of study in itself. It must be remembered that this was precisely what was done by the European peoples during the Romanesque, Gothic, and Early Renaissance periods—until, in fact, the Vignolan and Palladian orders froze the life out of art. But the opening up of Japan and the study of the fanciful Japanese decoration have had the effect of calling atten-

tion to the free phases of European art, and have thus influenced toward originality and freedom of design many artists who have never adopted a single purely Japanese motive.

Architects.—There are ever two factors in evolution—the environment, and the reaction of the evolved product upon the environment. Before a nation can have an Architecture it must have architects—that is, men who, whether in practice as architects or not, know what has been and what can be done with materials. That there may be architects, there must first be a need of them. It is only during recent years that Architecture has been studied to any great extent as a fine art. The mechanic-architect—the man who knows only the traditions of a trade which is but one of the branches necessary in construction—has been far more prominent than the cultured artist-architect. The latter existed, but was rare until after the middle of the present century.

New Movement in Architecture.—During the early decades of the century purely utilitarian matters absorbed the inventiveness of the American people, and art was by the great majority looked upon as something superfluous; but constant communication by steam and by telegraph, the constant perusal of what is occurring in Europe, the continual stream of American travel to England and the European continent, and the perpetual influx of Europeans have in the aggregate started a new art-movement in this country. The impulse came from without, but the ground was better prepared to receive it than in the colonial days. The once-poor colonies are now a mighty nation; riches and wealth abound, and the consequence is a perfect rush to the study of art, a *furor* to become artistic all at once. Such a state of things must give us much crude work, much that is mere imitation, much that is but an intense striving after oddity for its own sake; but the monotony, the stereotyped uniformity, of the decades before the Centennial have gone for ever.

Having now briefly sketched the various fashions and tendencies that have been and are in operation among us during the present century, we will pass in review a few buildings of each class, premising that, though important or characteristic structures will as far as possible be chosen, the number of important structures that have been erected is so great that of necessity the larger number must remain unmentioned. Although ecclesiastical architecture is not in the present age so prominent as in the days which gave the world the matchless cathedrals of Europe, it will be best to consider it first, since in the preceding chapters it has been given this position.

Church-architecture in the United States is, upon the whole, much inferior to that of England; this is largely due to the absence of an established Church, which in England still attempts to rival the more modest churches of the Middle Ages. Every sect in every city must have its church or churches, and the consequence is that places of worship are for the most part either small or of inexpensive construction. Though there are many examples to the contrary, American churches abound in

shams beyond the average to be found in other buildings. The elaborate tracery of the windows of choir and nave is on a near view seen to be mere woodwork, though the framework is stone; wooden pinnacles terminate stone buttresses, and wooden structures of inartistic design do duty for towers and turrets. This is in cities and in places where the churches are built of stone or of brick. In the country churches of wood are abundant, but these are at least honest timber-work, and, though until recently the pointed heads of the windows and the possession of a tower or a turret were all that existed to distinguish such a church from a frame dwelling, some of the more modern frame churches are artistically designed.

The great shortcoming of our church-construction arises from the fact that so many churches are designed in the Gothic style—a style not practised for other classes of buildings, and of which no grand ancient examples are extant on the American continent to enable the architect to study and contemplate until he has imbibed the spirit of mediævalism. Since most of our architects derive their ideas of Gothic from books and drawings, few of them have been able to design satisfactorily in the style of a long-vanished past.

St. Patrick's Cathedral, New York (*pl.* 56, *figs.* 1, 2), is the grandest religious edifice as yet executed in the United States. Its dimensions are small compared with those of the larger mediæval cathedrals, since the total length is but 306 feet, the breadth of nave and choir 96 feet exclusive, and 120 feet inclusive, of the side-chapels, and the width across the transepts 140 feet. Yet even in the height of the zeal and piety of the Middle Ages no structure so large, so magnificent, and so complete was ever raised in so short a space of time, since it was not commenced until 1858.

The style is that of the fourteenth century, commonly known as "Decorated" or Geometric Gothic, and the material of both the internal and the external surfaces, excepting the base-course, is entirely of white marble. The western front consists of twin-towers surmounted with spires¹ which rise to the height of 330 feet, and of a central portion terminated above by the gable of the nave. There are three deep portals, the centre and largest surmounted by a grand wheel-headed window. The octagonal spires are of open tracery. Between them and the square base of the towers is interposed an octagonal lantern, 54 feet high, with a traceried window on each side. The spaces between the buttresses of nave and choir are utilized, as in the cathedrals of Flanders, for side-chapels, above each of which is a three-light window with a traceried head. The clere-storey windows are larger and more elaborate than those below, and each is surmounted by a crocketed gable. Each transept front has in its centre a portal corresponding to that of the west front, and above this a six-light window 58 feet high. In elevation the body of this cathedral exceeds many ancient ones; the eaves of the clere-storey are 104

¹ The spires are not yet completed; our illustration is from the architect's elevation.—Ed.

feet above the ground, and the height of the centre aisle is 108 feet. The great feature of the interior is the superb clere-storey, to which the triforium forms but an appendage. Many of the windows are filled with rich stained glass.

Æsthetically, the shortcomings of this fine edifice arise from (1) the absence of a central tower or lantern, (2) the great uniformity of design, and (3) the cold and colorless effect produced by the material. The latter effect is the one most felt by the spectator. Not even the presence of the stained glass of the windows can annihilate the cheerless appearance of so much white marble. The sanctuary might well have been characterized by greater richness of ornamentation and some change in the windows, groining, etc., from the patterns of the nave. In the perspectives of both the exterior and the interior the central tower is missed by an eye accustomed to the grouping of such cathedrals as Canterbury and Lichfield. But continental Europe gives the warrant for the insignificance or suppression of the central tower, and, however we may succeed in pointing out the way in which additional effect might have been gained, we cannot deny the beauty and the grace of the structure as it is.

Comparison with mediæval cathedrals is scarcely fair, although the dimensions and the style of the building challenge it. The cathedrals of Cologne, Chartres, Amiens, and Canterbury were not the design of one man nor of one generation, nor were they built for a sect embracing but a portion of the population. They were the work of many heads and of many generations; for, though the offspring of the fervid piety of an entire people, not even this zeal sufficed to complete any one of them in a lifetime. It is not, therefore, with the great cathedrals, but with such parts of these cathedrals as were erected in a generation, or with smaller churches which were at once carried to completion, that St. Patrick's should be compared, and in this comparison it will not suffer greatly. It is, in fact, a fine example of mediævalism amid the bustle of the nineteenth century—an anachronism, it is true, but one which commends itself to a large class of the people.

Trinity Church.—The church which in historical sequence deserves first mention after St. Paul's at New York City, and the one which turned the tide of public favor toward Gothic as the correct style in church-architecture, is Trinity, the work of the elder Upjohn, an Englishman trained in the Gothic traditions of his country. It was erected in the fifth decade of the century, and is a good example of fifteenth-century work. Its steeple, 284 feet high, was not many years ago esteemed a lofty one, but it now scarcely rises above the tall commercial structures which surround it, situated as it is in the heart of the business-portion of the city. Mr. Upjohn executed several other churches, always in good taste, but without much effort after originality.


Among other of the smaller New York City churches may be mentioned St. Thomas's (also by Upjohn)—the interior of which seems to have been suggested by Ely Cathedral—the collegiate Dutch Reformed Church,

and Grace Church. The Madison Avenue Methodist Episcopal Church has a most effective tower of rough-hewn stone, open on all sides, and with a projecting balcony beneath each of the open arches. Holy Trinity, Brooklyn, by Lefevre, is a work of the fifth decade.

All Saints' Cathedral at Albany (*pl.* 56, *figs.* 3, 4) is a small structure compared with the mediæval cathedrals, since its length is only 260 feet and the width across the transepts 110 feet. It is designed somewhat in the style of the Gothic of the South of France and Spain, and is peculiar for the great comparative width of the nave and the narrowness of the side-aisles. This departure from established custom, as well as others, is for the purpose of giving the worshippers an unobstructed view of the chancel and the preacher. The transepts have an aisle on the western side, and the choir two aisles for three bays of its length, the remaining two bays, forming the sanctuary, being without aisles. The nave, choir, and transepts have quadripartite stone vaults, while for acoustic reasons the central octagonal lantern has a wooden roof. The windows of the sides of the nave are without tracery, those of the transepts have but little, while those of the choir are rich, the entire arrangement leading up to the grand traceried windows of the square east end. There are an ambulatory round the sanctuary and a small cloister and chapter-house to the north-east of the choir. The central tower is purposely subordinated to the two western ones. On account of the nature of the subsoil, the foundations of the outer walls are made to form practically a unit with those of the main pillars. There is a crypt beneath the whole of the main building.

The west front of the Albany Cathedral is probably the purest and the most impressive example of exterior Gothic upon this continent. Three deeply-recessed portals rich with carving lead into the church, and above them the twin-towers rise with a plainness comparable to that of the towers of the great Mexican churches before described, though differing in style. Between these unadorned parts is a grand rose-window. The towers become lighter and more ornamental as they ascend, and their plan changes from square to octagon above the level of the triple light that surrounds the rose-window. The spires are the least admirable part of the composition. The entire façade is French in its treatment and outline.

Garden City Cathedral, at Garden City, founded by A. T. Stewart, on Long Island, twenty miles east of New York City, is a church which challenges notice both by its assumption of the name of "cathedral" and by its great elaboration of detail. Every gable is profusely crocketed; every pinnacle on aisle and clere-storey is flanked with gargoyles; flying-buttresses spring from aisle to clere-storey; the windows are filled with marble tracery. Below the buttress and the narrow traceried windows of the seven-sided apse is the crypt—the mausoleum of its founder—a chamber richer than all above. The baptistery, roofed with stone slabs, and with slender *flèche*, is effective. The fault



of the structure is over-ornamentation, and this is even more evident in the interior, where marble gives way to plaster in the vaulting.

Philadelphia has a few modern churches of sufficient importance to call for special mention. The Cathedral of SS. Peter and Paul, a brown-stone structure in the Italian style, with a dome at the intersection of the nave and transepts, is the largest. The First New Jerusalem Church is a graceful and most picturesque composition, and, with the adjacent schools, forms an attractive group when viewed from the south-west; it is of brownstone, in the Geometric phase of the Gothic style. The First Unitarian Church is a singular structure having an angle-porch carried upon short columns with carved capitals and surmounted by a high spire-like roof; adjoining it is a low aisle the piers of which have sculptured capitals. The low porch tower and aisle, backed by the higher part of the edifice, are in themselves highly picturesque, but the building as a whole loses importance through the small elevation of its principal façade.

The Holy Communion Church (Lutheran) is a massive Romanesque structure with a cloistered porch which recalls Sta. Maria in Capito, Cologne. The tower, like so many others appended to modern churches, is unfinished, but its base and the entire exterior are in thorough harmony with its sculptured inscription: *A mighty fortress is our God.*

The Tabernacle Church (Presbyterian), recently erected, is also a picturesque Gothic composition, combined as it is with school and manse into a group of the most varied outline. The north front has a beautiful traceried window and a well-formed tower of moderate height with a portal at its base, while a side-entrance and an arcade diversify the east façade.

The Church of St. James the Greater (Catholic) is a far more pretentious structure. The west front is open to criticism on account of the conflicting lines of the portal and window and of the inequality of the flanking-towers in a front which looks as though intended to be symmetrical, while the entire interior is roofed with vaulting in lath and plaster. Nevertheless, it must rank as one of the finest churches of Philadelphia, and certainly surpasses any other Catholic church of that city.

St. Mark's and St. Clement's are also good examples of Gothic Episcopalian churches, which certainly take the lead in the use of this style, followed closely, however, by Presbyterian churches.

St. Stephen's Memorial Church, at Lynn, Massachusetts, is a composition somewhat out of the common, since its tower ends above in a gable and ridged roof, and the non-apsidal part of the chancel has a bell-turret placed at the end of the roof. The apse beyond this is very effective, as is the interior.

The Cathedral of Notre Dame at Ottawa, Canada, is a lofty and spacious Gothicized stone structure with open-work twin-towers 200 feet high, and with a light interior. Next to the government buildings, it is the most important edifice in the city, and one of the handsomest churches in Canada.

Among the greatest singularities in church-architecture is the massive square tower, 176 feet high, of the Brattle Square Church, at Boston, designed by Richardson. Around its summit runs a frieze of colossal bas-reliefs representing the sacraments of baptism, communion, marriage, and burial. At each angle is a statue of an angel blowing a golden trumpet; above this is a machicolated parapet covered with a tiled roof. The columns that carry the arches of the porch are so short that their capitals are level with a man's head. Boston has two fine Unitarian churches, one of them a Roman Corinthian edifice, the interior of which was apparently suggested by the Annunziata Church at Genoa; the other, Gothic treated with some freedom.

The Church of Our Lady of Perpetual Help, Boston, is a large Romanesque or round-arched Gothic pile with twin-towers in front and an octagonal lantern at the intersection. Its dimensions are 215 feet in length and 115 across the transepts.

The "New" Old South Church, Boston (*pl.* 57, *fig.* 1), is one of the finest in America—an Italian Gothic structure of pleasing outline with a central lantern and groups of lancet windows. The tower rises massive and square, without buttresses, to the ornate belfry-stage. The entire structure, with its bands of light and dark stone, recalls the churches of Italy.

Trinity Church, Boston, (*pl.* 58, *fig.* 1), a Romanesque—or, if preferred, a "Byzantine"—structure, is the work of Richardson. The exterior has a grand central tower and is of massive and imposing proportions, though it needs the addition of the towers which were intended to flank the entrance. The interior, covered with mural paintings and lighted by the central lantern, has a grandeur seldom found in American churches. About a year before his death (April, 1886) the architect improved his original design by adding to each of the square towers a storey about 20 feet in height and terminating in a pyramidal roof; the towers are to be connected by an arcade supported on double columns. A grand porch with three round arches and elaborate sculpture was also designed, and will, if executed, make of Trinity Church perhaps the noblest, though not the largest, church-edifice in the United States.

Among ecclesiastical structures it may perhaps be permissible to include the well-designed lodges at the entrance of Greenwood Cemetery, Brooklyn, New York—structures which, though small, are at once architectonic and sculptural. Both lodges are cruciform, and the keeper's lodge rises into a solid central tower. Another noticeable entrance-lodge gives access to Spring Grove Cemetery at Cincinnati, where also is the Dexter Monumental Chapel, which in its whole treatment, from the base which supports the bold standards and the pinnacles from which spring the flying-buttresses to the elegant terminal *flèche*, speaks the aspiring spirit of true Gothic.

Mormon Tabernacle.—No more singular structure can be than the Tabernacle at Salt Lake City; it has been likened to an soup-tureen or to a turtle's back. A huge oval-shaped roof

an area 250 feet long by 150 feet wide, with a seating capacity of about ten thousand persons and acoustically so arranged that the voice of the preacher can be heard with startling clearness at its farther extremity, it is, notwithstanding the lack of all architectonic effect in its huge roof or in the short brick piers which support it, a monument to the bold originality of the man who designed it. The Mormon Temple, erected at a cost of ten million dollars, and said to be like Solomon's, is fortress-like in its massiveness and has walls 9 feet thick.

Synagogues.—For some reason not particularly evident, synagogues usually affect the Moorish style. Nothing can be more certain than that the temple of the Jews at Jerusalem bore no resemblance to this style, but Saracenic brings to the modern mind Oriental ideas; and thus the horseshoe arch, the minaret, and the ornament of Ishmael have been adopted by the descendants of Jacob. The Temple Emmanuel, New York City (*pl.* 57, *fig.* 2), has a most ornate and symmetrical exterior with two towers and an arcade in the centre, and, although the effect—almost inseparable from the style—is pretty and fanciful rather than grand, it ranks among the finest of the religious edifices of the city. The Rodef Shalom Synagogue, Philadelphia, has an effective façade, and is Gothic in sentiment notwithstanding its Moorish forms. The Synagogue Emmanuel in San Francisco is peculiar among synagogues from the fact that the windows are filled with Gothic tracery and its walls and towers set with Gothicized buttresses.

Public Buildings: Government Buildings.—As has been remarked (*p.* 351), the government buildings of the United States either are for the most part strictly classical structures or are conceived in the Palladian phase of the Renaissance, and hence do not call for lengthy descriptions.

The Capitol at Washington (*pl.* 58, *fig.* 2)—the inception of which belongs to the last century—is unquestionably the grandest pile in that city, and probably still the most monumental of United States buildings. Notwithstanding its conventionally classical style—abandoned in this age because of its evident incongruity with modern needs—it is an edifice of which a great nation may be proud, majestic both within and without and gaining in effect from its position on a commanding site. The Capitol consists of an older portion, now forming the centre and measuring 352½ feet by 121½ feet, and two wings, each 142⅔ feet by 238¾ feet, exclusive of porticoes and steps. The centre has a portico 160 feet wide. The entire length is 751⅓ feet and the greatest width 324 feet. The dome rises to a height of 300 feet above the basement-floor. This edifice is the work of successive government architects from its foundation, in 1793, almost to the present time. The order of the porticoes is Corinthian, and a Corinthian colonnade runs around the base of the grand dome. Above this colonnade the dome has a tier of round-arched windows between pilasters, and the transition from this to the curve of the dome is effected by a series of scrolls. The dome is of cast iron.

Treasury and Patent-Office.—Among the older government buildings

may be cited the United States Treasury, a structure 465 by 266 feet, with four fronts. The building commonly known as the Patent-Office, which has recently been subjected to considerable alteration, is also a four-fronted building, with a portico in the centre of each of its sides, the principal one consisting of two rows of eight columns. As Grecian structures these monumental piles are not unworthy, but the incongruity between their appearance and their purpose is manifest.

Pension Bureau.—The newer government structures at Washington have followed neither the Grecian nor the vernacular Palladian. The Pension Bureau is a large and severely symmetrical structure in the style of Bramante, having three storeys of rectangular windows, a bold cornice, and an attic in the centre. The decorations are of terra-cotta.

The Bureau of Engraving and Printing is in red and brown brick, round-arched and without the orders, and may perhaps be called Romanesque. The National Museum will be found under *Museums*.

Parliament-houses, Ottawa.—One of the finest structures upon the continent, and at the same time one of the best examples of modern Gothic left by the Victorian revival of the style, is the Parliament-houses at Ottawa, Canada (*pl.* 59, *fig.* 1), for the most part a work of the seventh decade. A recent and beautiful addition to this is a polygonal library having a lofty window with trefoil tracery in each of its sides. Above is a lantern with lancet lights.

The New Château St. Louis, at Quebec, is an actual French château of the sixteenth century, with its round turrets, high-dormered roofs, and tall chimneys, with its screen-work of pilasters separating windows with rounded upper angles, and its picturesquely broken sky-line. The ranges of large windows which light the two principal floors are carried across the tower, the upper part of which is frowningly massive and pierced only with small windows. The contrast is striking, but there is no look of weakness, as ample piers are left at the angles. The St. Louis Gate, Quebec, is modelled upon the old St. Louis Gate, and harmonizes with the existing fortress.

Custom-houses.—The Boston custom-house may perhaps be reckoned the finest structure built under the influence of the Greek revival, since, though it suggests a temple, its low central dome and the different treatment of the centre and the ends of the longer fronts prove that it is not one, while they do not destroy its look of repose. The columns, free in the porticoes and engaged elsewhere, are of the height of the two storeys of windows. Other pseudo-Greek government buildings are the New York custom-house, which has on the north front a row of twelve Ionic columns, while six others form a deep portico in the centre, and the custom-house and treasury at Philadelphia, a temple-like structure with eight Doric columns along its façade. Standing among more lofty modern piles these have a look of monumental repose which is in strange contrast with modern ways. The custom-house at Chicago is a semi-Gothic imposing dimensions. The lower storey, with its segment-headed

has nothing Gothic about it, but the arches of the upper storeys have the extrados pointed, and the roof is frankly Gothic. The original design had domical towers rising above the roof, but alterations were necessitated by the weakness of the foundations.

The New Custom-house at St. John's, New Brunswick, is a plain free-stone structure in English round-arched Italian, with pilasters in the centre pavilion only. The windows are in tiers of three, the upper enclosed by a round arch; above these is a tier of tall round-arched windows. The *ensemble* is pleasing, though the circular windows in the upper part of the centre pavilion seem out of place.

The Mints of the country are Greek temples. Philadelphia has a small one massive in its proportions, and doubtless at one time imposing, but now dwarfed by comparison with the huge city-hall. The San Francisco branch-mint is an imposing Doric pile with lofty porticoes and a magnificent flight of steps, but has nothing which needs special description.

Post-offices.—An imposing granite pile is the Philadelphia post-office. The façades on three sides are in the regular palatial style, broken up somewhat into pavilions, but with the ordinary correctly conventional regularity of pilaster superposed upon pilaster and window succeeding window. The entrances are upon the east front, and the central pavilion, capped by a square dome, is one of the most conspicuous objects in any view of the city. There is considerable variety in the outline of the New York City post-office. The style is Renaissance, but it differs from most American structures in that style by the abundance of square blocks which at regular intervals intersect pilasters and columns. These, of course, destroy the continuity of the vertical lines, so that the shafts of the orders can scarcely be recognized; yet even this variation is a relief from the monotony of the orders, and, coupled with the irregular shape of the pile, produces a good effect.

Some post-offices recently erected depart widely from the classical traditions that previously ruled in government buildings. This is the case with that at Lexington, Kentucky, where rectangular, segmental, and semicircular-headed openings occur without a trace of the orders; with the one at Marquette, Michigan, which leans to the Romanesque; and with the post-office at Rochester, New York, which has a decidedly Romanesque angle-tower. One of the most picturesque of these recent buildings is the United States post-office and court-house at Augusta, Maine, which adds to the triple-arched portico—present also at Marquette—a tower more original and more graceful than that at Rochester. The upper part of this tower is a circle of larger diameter than the square on which it rests, and to which it is joined by a series of splays, and is pierced by four triple lights. The post-office at Quincy, Illinois, is decidedly "Queen Anne" above, while that at Frankfort, Kentucky, has a picturesque tower ending in an octagon and an elegant gable with an elliptic arch encased between flat pilasters, and with a free rendering of a Doric entablature above; this entablature is also carried across the smaller gables. Another fine post-

office and court-house is that at Atlanta, Georgia, a pleasing and symmetrical piece of modern Gothic, consisting of a centre and two wings, the first with two series of five arches, forming two superimposed loggias and surmounted by five large windows; the latter with smaller openings distributed in groups.

State and Municipal Buildings.—State capitols and city-halls which were erected in the earlier decades of the century followed the Greek manner patronized by the government, and, as the Capitol of the country had a dome, the dome—or, at least, a domical tower—came to be considered the correct terminal for all large public buildings; so that few have escaped its presence.

The State Capitol at Albany, New York (pl. 59, fig. 2), as originally designed, was an immense rectangular Renaissance block in which an order was given to each storey, much after the style practised at Venice by Sansovino and Sanmicheli, and was crowned by a domical tower of grand proportions. Magnificent though strictly conventional in its treatment, this marble pile proved too costly to reach completion, and thus it came about that a building commenced in one style was finished in another, since the design for which Richardson—at least, in part—was responsible was accepted, and the upper portions of the edifice were completed according to it. There is great beauty in the newer portion, but it cannot be said that there is congruity. The accepted design showed on the north front a Romanesque upper storey boldly placed above Corinthian pilasters and disregarding their centres, but in execution this was modified. The apostle of the round-arched style here condescended to take his motives from the French Renaissance—from the châteaux of Blois and Chambord rather than from Speyer or Gelnhausen. Yet the towers are Romanesque, while the cornice of the order below is changed to a Gothic string-course. Parts of the interior, as the Hall of Assembly, the work of Eidlitz, are Gothic of the most beautiful and most thorough kind—vaulted mediæval halls enshrined in a classical exterior.

The Capitol at Hartford, Connecticut (pl. 60, fig. 1), although it has a dome like so many other capitols, is far from being an ordinary structure, and may, indeed, be reckoned one of the finest public buildings in the United States. The style is Gothic, and the regular façade is broken into a centre, curtains, and wings. The centre has two low towers in every way subordinate to the tall tambour and dome which rise behind them. This cupola-crowned tower is dodecagonal in plan and decidedly Gothic in the sentiment of its details. A series of low openings in triplets separated by buttresses runs around the base, and above this is a range of tall pointed arched windows separated by clustered columns with foliated capitals. The anterior shaft of each cluster is continued higher and corbelled out by a second capital into a small turret. The twelve turrets thus formed are connected by arches with pierced spandrels, above which is another arcade, consisting of three arches in each of the twelve divisions. The terminal finial is not

ppy.



The City-hall of New York City, commenced in 1803 and finished in 1814, was doubtless esteemed at the time of its erection not only a fine but also a large structure, yet now, encased among commercial buildings which tower far above it, it seems insignificant, and is almost as much a relic of the past as is Faneuil Hall, Boston, or Independence Hall, Philadelphia. It is of marble, in a semi-classic style, with pilasters and arches, and is terminated above by a turret much like the turrets of colonial or Queen-Anne days. The entrance-hall and the rotunda, containing the staircase, are well and strikingly arranged. The south front is in imitation of the lake-front of Fontainebleau. The adjacent court-house is a more strictly classic and more modern pile, to which at a later date has been added an ornate wing with round-arched windows and much carving, Romanesque rather than classic in feeling.

The New City-hall, Philadelphia (*pl. 61, fig. 1*), is among the largest of modern buildings, slightly exceeding the Capitol at Washington in area. Seldom indeed has a better opportunity been afforded for architectonic display than is given by its position—at the junction of two of the principal streets of the city. It occupies what was once Penn Square, the site of the city's earliest waterworks, and thus stands free all around. This immense structure, 486½ feet in length from north to south and 470 feet from east to west, is conceived in the style of the new Louvre at Paris, with central and angle pavilions, the whole surmounted by a mansard roof of great height. Each front is a symmetrical whole, and, with the exception of the slight difference in length, the fronts are alike.

The central feature is a gigantic tower which will rise upward of 537 feet above the pavement, and thus will exceed in height by 50 feet the greatest length of the structure. This tower was designed to be the loftiest in the world, but in this respect has already been surpassed by the Washington Monument at the national capital. It occupies the centre of the northern façade, but its base is not visible from the exterior, as it rises from behind the central pavilion. From the internal quadrangle it towers as a mighty mass, and is visible throughout its entire height to an elevation, even in its present (1888) incomplete condition, of about 350 feet. In any distant view of the city it is the most conspicuous object. Its terminal ornament will consist of a statue of William Penn 36 feet in height.

The magnificence of this edifice, its imposing dimensions, the rich array of marble and polished granite, and the beautiful sculpture which adorns its façades and its entrance-halls, are calculated to disarm criticism; yet there are few who would not, upon reflection, be ready to own that the structure suffers greatly from the conditions imposed upon the architect to provide open thoroughfares through it on the lines of the streets. The retention of these thoroughfares has compelled the sacrifice of those grand flights of external staircases leading up to the principal floor which add so much to the appearance of many modern buildings,

and notably to the Palais de Justice of Brussels—that most grandiose of recent edifices (*pl.* 53, *fig.* 2).

Lofty-columned outer entrance-halls welcome the visitor, but the necessity of continuity in the floor above has caused the reduction of the exits from these halls to the inner quadrangle to a mediocre height. One of the entrances passes through the tower, and here an effect of more than Egyptian massiveness is accentuated by forceful Titanic figures that form the capitals of the four short columns and seem to carry the tower above. Taste has changed or developed since this immense structure was commenced, and few indeed are the students of art who, when they look at its vast proportions, do not wish that it had been conceived in some other style—or that, at least, some little variety had been given to the façades—and that the huge mansards were absent.

The City-hall of Albany has a plain square tower ending in a short spire and having three tall windows on each side. The windows in the principal gable are arranged in groups of three, varied by five across the base of the gable. The masses about the entrance reverse the usual order by becoming more solid as they rise, presenting a contrast to the gable-end and to the round turret and the broad arch which flank the entrance on the other side. Here, as elsewhere, Richardson shows his masterly skill in the arrangement of masses.

New York is proud of Jefferson Market Court-house, a Gothic structure with two admirable façades which meet at an acute angle, where a fine tower, circular most of the way up, but square at top—where it bears a clock—is introduced in a most effective manner.

Allegheny County Court-house, Pittsburg, is perhaps less striking in its façades than are some other of Richardson's works; yet it has two bold entrances, one flanked by two semicircular turrets and consisting of three arches, the central largest, while the other is drawn out into three grand arches divided by smaller ones, its central arch piercing the base of a massive tower which rises in unmitigated severity high above the structure. The tower has four angle-turrets and ends in a low spire, below which are a series of small and one of large openings. The upper storey of the main building has groups of small round-arched windows, and the principal floor has larger round arches.

Another of the large public buildings of the country, and one of the finest, is the City-hall of Baltimore, completed in 1875—an edifice of which the city is justly proud. It is a four-storeyed marble building in the Renaissance style, with a mansard roof, and is crowned with a dome 260 feet high. Boston has a city-hall of the usual type, with dome and superposed orders.

The recent revival of art has as yet scarcely reached the Western cities, where, even more than in the East, it is far from the traditions of the past. The few erected before the American Civil War follow the Grecian manner, and almost all later are in the spirit of Italian Renaissance or the French

illustrations of French buildings have been widely circulated, and literal copies have in some cases been made. Most of the capitols and city-halls are expensive edifices whose construction has extended through many years, and, as it is seldom that an architect or a public is bold enough to make so radical a change as was made at Albany, they have not unfrequently been completed after the current of architectural fashion has commenced to take a new direction.

Chicago City-hall.—The twin public buildings of Chicago—or, to speak more correctly, of Cook County and of Chicago—are an exception to the rule of the dome. Almost identical in design, but differing slightly in materials, these structures, which occupy a spacious square, are connected at the ends by large arches which give access to interior courts. A dome was contemplated, but conviction of its uselessness more than the consideration of expense caused its abandonment. This edifice is also, happily, without the mansard, which has too long been so prominent in American architecture. In style it is Renaissance a little less elaborate than the City-hall of Philadelphia, but artistically its equal. The State-house at Springfield, Illinois—a structure rivalling the Chicago public buildings in cost—has a mansard roof on each wing and a dome in the centre; the Indiana State Capitol at Indianapolis has a dome, and that of Iowa, at Des Moines, constructed since 1870 at the cost of about one million five hundred thousand dollars, has a small dome.

The New City-hall of San Francisco, California, is another huge municipal building as yet unfinished. This structure will cover more ground than even that of Philadelphia, since one of its fronts is over 800 feet in length, and another over 600. As a piece of artistic design it is superior to its Eastern rival. Pavilions, domes, towers, and connecting curtains—each of which is in itself symmetrical—are grouped into a grand whole which culminates in the cupola of the spacious entrance-rotunda. The style selected is Palladian, and the pavilions and porticoes consist of one series of Corinthian columns and pilasters surrounded by a deep entablature and crowned by a balustrade, the single order serving as a mask to three or four storeys. The detail is monotonous, but the outline charms. Unfortunately, the material selected—on account of the great expense of stone at the time the building was commenced—is brick coated with cement. One of the most pleasing parts of the design is the Hall of Records, a circular building surrounded by a colonnade, surmounted by a dome, and connected with the main building by a quadrantic corridor. The outline recalls the baptistery at Pisa.

Libraries: *The Billings Library*, Burlington, Vermont, is a good example of the Romanesque of Richardson, and would in any age or country be accounted a notable structure. No other architect in this country has ever entered so thoroughly into the spirit of the round-arched styles as Richardson; yet all his buildings bear the stamp of originality and every detail is worked out with the utmost delicacy.

The Library at Woburn, Massachusetts (*pl.* 63, *fig.* 3), is among the

of the uppermost storey are unrelieved save by blind arches. The central hall, 51 by 58 feet, is good, and is the most striking feature of the interior. The walls are of local blue limestone, with cornices, arches, etc., of sienitic Missouri granite; the roof is of red Akron pantiles. The present structure, begun in 1882, is but the west wing of the proposed building. The eastern wing will have a fine polygonal apse with nine pairs of windows and a tall tower on the line of the entrance-front. This projected tower terminates in a bold machicolated cornice surmounted by a baldachin-like central turret with a high pyramidal roof.

The School and Museum of Fine Arts at St. Louis is a modest and by no means large, but simple and effective, building, with a range of five large windows, the three central ones set in large round arches, while those of the wings have carved panels above them.

The Chicago Art Institute is a handsome and massive rather than delicate structure. Four great recesses at the sides and three at the ends, separated from one another by broad flat pilasters, each enclose two tiers of windows. Below these recesses the windows of the lower floor are square-headed, but a prominent though rather low round-arched entrance stands beneath a window of the east front. A round turret rises from each angle; the north side has four dormers, and the east front a great gable. Level with the dormers on the gable-front is a row of seven square-headed windows contrasting boldly with the great arches below them. Higher up in the gable is a group of four similar lights, and above them the gable is covered with carved ornament.

The Museum of Fine Arts at Boston, commenced in 1871, is one of the first buildings in the United States upon which terra-cotta—made in England from the architect's drawings—has been extensively used. This structure may be called Italian Gothic; upon the ground-floor it has arched openings in groups separated by buttresses, while, above these, large panels, some of them filled with sculpture, mask the picture-gallery. The entrance is through a pair of arches. The present building (1888) is but a fourth of the design.

Memorial Hall, in Fairmount Park, now used as a museum of industrial art, is in conception one of Philadelphia's finest structures. Erected at the same time with the hurriedly-constructed buildings of the Exhibition of 1876, it was intended to be a monumental memorial of that great world's fair, but its construction suffered from the hurry of the time, and it has never been completely finished. None of these things were the fault of the designer, who planned a grand symmetrical structure with a central and wing pavilions connected by colonnades, the whole crowned by a cupola. Were it but mounted upon an elevated terrace, its grandeur would be acknowledged, and even as it is few European museums have an interior hall equal to that of this structure.

The Academy of Fine Arts at Philadelphia. ~~its purpose admirably.~~
The halls, of red ~~ligh~~ ~~le has consid-~~
erable original ~~ase is of red~~

sandstone; the upper part, chiefly buff sandstone adorned with polished red-granite colonnettes, and with tiles in the spandrels of the central arches, etc. The cornice is peculiar, and below it extensive flat spaces of rough stone contrast effectively with the series of rilievs which surmount the windows of the flanks, and with the carving and color of the centre bay of the façade.

The National Academy of Design, New York City, is to some extent an imitation of the ducal palace at Venice. There are but two tiers of windows, surmounted by a high blank wall relieved by the introduction of small circular openings and adorned with diamond patterns in a stone darker than the rest of the façade. The principal floor has pointed arches in stone of two colors, turned over square-headed windows. The structure is not improved by its cornice, but the entrance is effective.

The Metropolitan Museum of Art, New York City, has walls of red brick with plain pointed arches of alternating rough and worked gray-granite voussoirs, but is a comparatively plain structure. Of the intended buildings the part erected is but a section, measuring 218 by 95 feet. A wing 230 by 128 feet, enclosing a small court, is now in course of erection, and another is projected upon the opposite side of the existing portion.

The Museum of Natural History, New York City, will, when completed, be the largest building of the kind extant, since it will form a square of about 640 feet, enclosing four courts, each about 230 feet across, and with pavilions and projecting wings which will bring parts of the front quite near to the edges of the area, about 1000 by 800 feet, set aside for its reception. At present this vast edifice is only projected, the part actually erected being one arm of the central cross. This, though only about one-sixteenth of the intended building, measures 200 feet by 60, and has four storeys for the exhibition of specimens, besides workshops, etc., in a lofty upper floor. The structure is of red brick with dressings of gray granite, the arches pointed, and it has a plain but substantial appearance.

Club-houses.—Club-life is less general in America than in England, and club-houses are less prominent; yet the Union League and other political clubs often have fine buildings, and the Masonic and other similar fraternities have erected in most cities structures which possess some architectural features.

The Union League Club-house in New York City is a prominent piece of Free Classic, with steep gables facing the street, pilasters of small projection, and a main cornice which does not crown the edifice. This is the most elegant club-house in America.

The Union League Club-house, Philadelphia, is a quiet structure in Italian Renaissance, with quoins and pilasters of brownstone on a ground of red brick, and with a commanding entrance-porch and steps.

The Masonic Temple is one of the most imposing and massive buildings in Philadelphia. Being 275 feet long by 150 wide, with a tower of

picturesque outline 240 feet in height, it dominated Penn Square until the huge city-hall arose beside it. It is built of gray granite, and the exterior is round-arched and may be called Romanesque, but does not strictly conform to the Norman phase of that style.

Hospitals and Asylums do not always rise to architectonic dignity: they are often simply huge piles of buildings erected at a relatively small cost. But this is by no means universally the case, and many really fine edifices of this class have been erected. The most approved plan of a hospital does not, however, lend itself readily to architectural display, since, wherever the site is sufficiently large to admit of it, hospitals of every kind are now built in detached pavilions connected only by a corridor upon the ground-floor. The plan permits of the grouping together of such patients as are similarly affected and of the isolation of dangerous cases, while it greatly lessens the risks of contagion, diminishes the dangers of fire, and renders more effective the means employed for thorough ventilation and lighting.

The New York Hospital, New York City, has a carefully designed and effective façade. The Roosevelt Hospital, in the same city, is one of the best planned in the country. The New England Hospital for Women and Children, at Boston, small though it is, shows careful study. The Jefferson Hospital, at Philadelphia, is a quiet bit of good brickwork situated in the centre of the city, and the Hahnemann Hospital in the same city is a structure of modern brick Gothic with prominent horizontal lines and a cornice of small pointed arches.

Asylums.—The T-form is now considered the most appropriate for an asylum, the horizontal line representing the asylum proper, while the vertical arm contains the entrance, committee-room, steward's stores, etc. The asylum portion must, however, consist of several pavilions echeloned back. Notwithstanding these drawbacks, the mere expanse of exterior surface supplies an element of grandeur, and architects skilled in the treatment of masses have accomplished good results by making the most of this, of the diversity of sky-line gained by the varying heights of the buildings, and of the tall shafts necessary for ventilating and heating. The State Asylum for the Insane, at Buffalo, is an evidence of this. The Central Ohio Lunatic Asylum, at Columbus, is peculiar from its Norman characteristics.

The Hudson River State Hospital for the Insane, near Poughkeepsie, is Gothic in sentiment, the arches having a circular entrados and pointed extrados. It consists of wings and a centre, connected by corridors.

The Hartford Orphan Asylum is a fine brick building in Gothic akin to that recently practised in England. It consists of a centre with two advancing wings, while a large dining-hall projects from the rear of the centre. The windows of the ground-floor on the principal front are paired lights surmounted by a high-pitched relieving-arch; those of the floor above, triple lights, the centre highest, and the side lights enclosed in an arch. Many of the windows have lintelled



prominent, and a large five-sided bay gives variety to the eastern façade. Buttresses rise through the half-basement and ground floor of the principal front, and the dormers have deep projecting hoods.

The buildings of this class in the Western States are in many respects superior to the State and municipal structures, since the former are often of brick and do not adhere to classical traditions.

The Napa Lunatic Asylum, California, situated in a beautiful valley at the northern end of San Francisco Bay, affords to the lunatics of the State a Gothic residence of solid brick and stone which is among the finest structures of California.

Penitentiaries and Jails, though intended for the vicious instead of for the incapable, have features similar to those of hospitals and asylums, since the approved plan—adopted from considerations both of health and of safety—is to divide them into wards. The guard-room is now usually placed in the centre, enabling the guards to see all points at once. It is seldom that these structures possess much architectural interest, though in many cases they recall the fortified walls of an ancient city. The “Tombs,” at New York City, an essay in Egyptian, is unique among prisons.

Educational Institutions.—The buildings composing a university can hardly be said to form a separate class, since they include structures of several classes—lecture-halls, laboratories, museums, chapels, libraries, and dormitories.

Harvard—time-honored in this young country, though it would be young in the Old World—marks in its various structures all the phases through which American architecture has passed; yet its finest buildings are undoubtedly its most modern ones. These are the Memorial Hall, a fine Gothic edifice, the gymnasium, the law-school, and Sever Hall, the last three of which are the work of Richardson.

At Yale the art-school is “revived” Gothic, but is of heavy outline, and its tower is without sufficient prominence. Most of the newer Yale buildings are in this style, including the Peabody Museum, which is perhaps the best. Princeton has a good Gothic dormitory, and the lecture-hall of the theological seminary, with its groups of cusped windows, is effective.

The University of Pennsylvania is a group of Gothic structures built of green serpentine, with dressings of Ohio stone. There is little ornament, but the grouping is effective and the general effect satisfactory. The buildings of the Veterinary Department, recently added, admirably express their purpose.

Stone Hall, Wellesley College, Massachusetts, is a fine structure in what may be called Free Classicism; but in its stepped gables and in the lines of its central pavilion approach the Flemish Renaissance. The entrance is well accentuated, contrasting admirably with the curtain-walls which intervene between it and the tower-like blocks which mark the intersection of the

The Massachusetts Institute of Technology is one of Boston's good buildings, as well as one of its most useful institutions. It was in this institute that the first school of Architecture in the United States was established.

Columbia College, New York City, like Harvard and Yale, has written the history of its expansion and the history of American architecture in its buildings, albeit the latest is not Queen Anne, but is a fine irregular Tudor-Gothic pile with a circular angle-turret, a rich oriel, and a chimney the flues of which, externally expressed, resemble a series of organ-pipes.

The University of Toronto, Canada, is considered one of the finest specimens of Norman in America, and has numerous denominational colleges affiliated with it.

Girard College.—Outside of Greece it would be difficult to find a structure more Grecian than the Corinthian temple which was the first building erected within the large enclosure devoted to the purposes of Girard College, Philadelphia. It is of white marble, roofed with marble tiles, and is perhaps the most truly monumental structure in the Grecian style possessed by the Western continent. But here, as in Europe, the Greek temple with its simple lines and surrounding peristyle proves its unfitness for modern use, since it permits of no enlargement. The necessary college-buildings have been erected from time to time as the growth of the college demanded, and the original temple stands like a stranger in their midst. The order is a large one, since each column is 6 feet in diameter and 55 feet high.

Public Schools.—Among the desiderata of a schoolhouse are the arrangement of the schoolrooms so that the light shall be admitted to the left and rear of the pupils; ample size of windows, which should extend as close as possible to the ceilings; roomy porches and entrances; staircases of stone or iron, covered with terra-cotta or tiles; conveniently-situated and well-ventilated hat-and-cloak rooms; and, above all, but most of all neglected, the best of sanitary arrangements. These things are essentials: architectural display is a non-essential; yet there is no reason why the outline of a schoolhouse should not be as picturesque as that of a dwelling, or even of a church. The porches, the turret for the bell, the projections and recesses often necessary to admit light, are all features susceptible of fine architectural treatment, while the staircases may with advantage be carried up in open loggias, thus adding greatly to the external effect. Unfortunately, the æsthetic has hitherto been almost completely left out of such structures.

Commercial Structures.—It is hard to classify the multifarious structures of the present day, and even the best classification may be considered simply as a mode of convenient reference. Office-buildings can scarcely be distinguished from apartment-houses, and stores—which, of all buildings except warehouses and factories, are the most strictly commercial—are even in these days of suburban life usually surmounted by

storeys occupied as living- or bedrooms. Yet in a general way the architecture of the business-streets of a city derives its *facies* from the commercial buildings, the wholesale and retail stores, office and insurance buildings, banks, warehouses, and factories, while the aspect of the rest of the city is dependent upon its private dwellings. The public buildings of any city, grand and conspicuous as they may appear in a distant view, have in most cases comparatively little effect upon the street-architecture.

Stores and Warehouses.—The street-architecture of New York City is in many respects unsurpassed in the world. Nowhere else do business-piles rise to such commanding heights; nowhere else can so much variety be found in combination with so much honest striving after architectural effect. There is more originality in a mile of a New York avenue than in ten miles of Parisian streets, and the picturesqueness and variety thus obtained more than atone for the want of palatial regularity. But it was not always thus: the older New York stores consisted of three storeys resting on granite posts and a girder. But a new impetus has been given to commercial architecture, and little now remains of the New York of a generation ago.

Although it is a rule that a building which most aptly expresses its purpose is the most satisfactory æsthetically, yet this rule has its exceptions. The great purpose of a store-window—or, as the English call it, shop-window—is to gratify the desire for display: space for the most attractive goods is the first desideratum. The architect who most completely yields to this desire doubtless produces the most suitable building, but in so doing he jeopardizes the apparent stability of the structure. It does not look constructional to raise four or five storeys apparently upon the edge of a great sheet of plate glass; the best architects, therefore, endeavor to meet the demand for glass without the complete negation of the elements of architectural effect. They seek to give the building something to stand upon without too greatly diminishing the window-area. He who best succeeds in reconciling these opposite requirements must be pronounced the best designer of store-edifices.

In narrow fronts the only brickwork or stonework visible upon the ground-floor is frequently the edges of the party-walls; the intervening space is bridged by a girder, and upon this the superstructure rests. An iron column may flank the entrance, but practically the entire space is filled with plate glass. By a slight widening of the edge of the party-wall, and by accentuation of the details at that point, the appearance as well as the reality of a solid pier can be given, and the solidity of effect is much heightened when the span is sufficiently small to allow the ordinary wooden cornice concealing a girder to give way to a substantial arch or lintel of stone or brick adorned with appropriate ornament.

Iron Fronts.—Often the whole front is of iron, which usually takes more or less Renaissance forms, sometimes retaining the screen of orders in conjunction with arched construction, while in other cases piers and arches only are employed. There is a tendency to attenuation in the

columns, and still more in the piers. Many iron fronts are not Renaissance, and some follow forms which can be executed only in metal, having narrow piers with mouldings which project forward, the piers being bound together by visible lintels of iron. This is honest construction, but fails to produce an architectonic effect. New York City contains in its business-portions a great number of these iron fronts, principally Renaissance in style. The Saracenic, lending itself to slenderness, would seem well adapted to ironwork, but does not appear to have been attempted often in store-fronts.

The commercial buildings of Philadelphia have until quite recently seldom exceeded five or six storeys, and thus, as the streets are as a rule somewhat narrow, the Quaker City does not equal New York in the general effect of its street-architecture. Some of the most imposing stores of decades preceding the Centennial were of white marble, Renaissance in their detail, but usually with string-courses and round-arched openings. Contemporaneous with these were iron fronts principally in the Italian style. But the iron front, whether of the palatial Italian or of the honestly-expressed ironwork type, is now becoming a thing of the past, and is giving way to brick and terra-cotta.

The prevailing fashion in retail stores is to fill in the upper portion of the store-front on the ground-floor with sashes divided into small lights, in accordance with the Queen-Anne manner, and to fill these lights with stained or corrugated glass. This colored glass certainly has a good effect inside, and the breaking up of the area of glass enables the lower portion to be made in a single sheet. Ornamental stone fronts are often inserted on the ground-floor of a structure the upper part of which retains unaltered the plainness of the less æsthetic period in which it was erected. Many warehouses in Philadelphia are built of red brick, with the heads and sills of the windows and the bond-stones of the piers of stone. The chief projections are the vertical lines of the piers, which run from bottom to top. Such structures have a look of strength, and express their purpose admirably.

Chicago, placed low down upon a lakeside flat, needs every architectural advantage, and has done her best to attain it. In magnificence, even before the fire of 1871, Chicago streets were not far behind those of New York City, but in æsthetic qualities they were deficient. Since the fire better things have been done, though there is still far too much adherence to the vernacular variety of Italian before mentioned. Many warehouses in this and other Western cities, however, exhibit Gothic sentiment, though with an almost complete absence of Gothic detail. Such structures are without projecting window-sills and cornice, which in the latter projects but slightly. If the piers are emphasized, the openings are square, and not to horizontal bands of stone at the level of the heads of the windows, and to bond-stones which appear on the

The rather narrow

re lined with



fine commercial edifices, the best of which have been erected since the great fire of 1872.

Banks and Office-blocks.—Philadelphia has some notable bank-buildings which have been erected during late years. Prominent among these is the Provident Life and Trust. The façade is massive in the extreme, giving an appearance of security in harmony with the purpose of the building. The material is granite in large blocks. Three bold and unadorned arches span the void left between four columns of polished granite with short shafts and salient sculptured capitals. Above these the front divides into a centre and two flanks. This centre is a square-browed, heavy-corniced turret carried by a massive pointed arch borne on columns like those below. Symmetry, variety, continuity of design, and an accentuated centre are here concentrated in one small façade 44 feet wide. The interior consists almost entirely of a hall 72 feet in height and about 120 feet in length, the walls set with glazed bricks and tiles in patterns in various depths of buff.

The National Bank of the Republic is another remarkable bank-building. Here, again, the architect has contrived to be startlingly original in a small space. Symmetry is dispensed with, and the material is largely brick. A heavy half-arch abuts against the half of a semicircular brick turret, and forms the portal. Above the arch is a sloping surface, permitting the semicircle of the turret to grow out and continue upward into a pinnacle. To the right of the turret are windows of bold design, the lower with conspicuous grilles of twisted iron. The structure is not hampered by close adherence to any style, though the details have much Gothic feeling about them. In the interior bilateral symmetry reigns, yet there is something unique in the two half-arches springing from a fireplace and abutting at their crowns against the side-walls of the long and narrow hall. The side-walls are colored of a deep dull red above a black-marble capping surmounting a buff-tinted dado. The two ends of the hall are of white stone with bands of bold carving, and the ceiling exhibits a series of stout wooden trusses borne on brackets.

The Insurance Company of North America is a very favorable specimen of the Queen Anne style. It has an ornate and picturesque façade with deep window-recesses, a fine oriel over the entrance, and a loggia above the oriel. Red brick, brownstone, and metal are employed, and show as such. The equilateral gable and the frieze of the main cornice are a mass of carving in brick—effective, but not delicate.

The Haseltine Building is a combination of store, picture-gallery, and offices. Red terra-cotta and buff brick varied with Indiana limestone are relied upon to give a greater play of color than is usual in Philadelphia edifices. The entrance to the picture-gallery and the offices is in the centre, and above it is a square oriel surmounted by a balcony with light stone colonnettes (*pl. 65, fig. 2*).

The Bullitt Building, or Fourth Street National Bank, is one of the

largest as well as one of the most massive and striking of Philadelphia's new edifices. The principal materials of the façade are brownstone and red brick, the details are few and large and covered with carving in low relief, and the aim of the designer has evidently been to produce an impression of power, and at the same time to combine Romanesque with Gothic.

Other Philadelphia office-buildings which should be mentioned are the Wood building, which, though plain exteriorly, is one of the best-arranged structures of its class in the city; the Forrest building, where some difficult problems of lighting have been well solved and a satisfactory façade obtained; and the *Record* building, which flanks the post-office and towers above it. The front is of granite, the piers are adorned with bundles of projecting roll-mouldings, the entrance has great corbels which carry nothing, and the openings are rectangular, yet the *ensemble* is imposing. Almost lofty enough to be called a tower, since its base is only about 50 feet square and its height at least twice as much, is the nine-storey building of Brown Brothers & Company. It is of buff brick and white limestone, the ornamental details in the latter material, and is Renaissance, having Corinthian pilasters running through several storeys.

The Drexel Building is the largest office- and bank-structure in Philadelphia. The bank, the part first erected, though externally of two storeys, contains a single large hall. In style it conforms to the conventional Italian Renaissance, with arches springing from piers framed by pilasters, and with small pediment-crowned pavilions at the angles. The material is white marble. The interior is spanned by immense girders hidden by ornamental cast-iron work, the style of which is in marked contrast to that of the building itself. The newer and larger portion is in the same style as the older part.

The Independence National Bank, adjoining the Drexel bank, forms as complete a contrast to the Drexel building as possible. Scarcely an inch of plain surface can be found in the structure; all is a mass of carving, wreaths, and female busts filling the front wherever it is not occupied by openings. The interior of this bank is, however, quiet and chaste, its chief drawback being its extreme narrowness. This small structure, except its façade, is entirely surrounded by the Drexel building.

The Keystone National Bank.—Another notable bank-building is the Keystone (*pl.* 65, *fig.* 1), a massive seven-storey structure with a projecting semicircular staircase tower of picturesque outline matched on the ground-floor by a semicircular bay. The entrance is placed between the two semicircles. The materials of the façade are of Indiana limestone, with a base of polished granite from Somes Sound.

The Mutual Life Insurance Company of New York, notwithstanding its adherence to the Italian palatial style, is one of the best of Philadelphia's office-structures, and is an example of what can be done by an artist-hand with the beaten paths of style. The east front has pavilions alternating with por-

tions adorned with pilasters, and in the centre a balcony borne on trusses carries two gray-granite columns which support a second balcony. The south façade has three superposed loggias, each formed by two columns separated from each other and from the piers by long intercolumniations. The order on the ground-floor is Ionic; on the two above it, Corinthian. The façade has a half-basement, three lofty storeys, and a tall attic with well-arranged dormers in front of a mansard roof. The material is granite.

Columbia Bank.—One of the most pleasing small buildings to be found in New York City is the Columbia Bank. Above the lower floor, which is of stone, the structure is red brick and terra-cotta. The upper storey is the distinctive feature. Each of the square bays terminates upward in a portico of four terra-cotta columns with Ionic capitals placed in pairs. These porticoes, immediately under a good cornice, give deep shadows and contrast well with the solid appearance of the rest of the structure. The square-headed windows of the bays on the north front and of the recess between are in triplets, and are bound together by a moulded architrave and by diapered panelling between the storeys. Those of the lower and uppermost floors are semicircular.

The Astor National Bank, New York City, is a striking example of modern Renaissance. Three large arches, with their pilasters, occupy the greater part of the width of the façade. In the recesses of these arches are inserted oriel-windows of metal, several storeys high. The soffits of the arches are enriched. The two lower storeys are of red stone relieved with flowing carving at the base of the pilasters, which are also adorned with a terra-cotta enrichment on each floor. The windows in the piers right and left of the arches are surrounded by terra-cotta arabesques, but have no mouldings. The upper part of this building is occupied for the most part by a great gable filled with a diaper pattern and containing two storeys of windows; on each side of this gable is a dormer. Two short and massive polished gray-granite columns emphasize the entrance, and the windows of the ground-floor have bracket-heads. Quaint though this structure is in members and in detail, it is symmetrical, and forms an attractive composition, which would, however, be improved by the absence of the metal bays.

Manhattan Bank.—Another fine and lofty structure is the Manhattan and Merchants' Bank. In this building massiveness is given both by the dimensions and by the material, which is gray granite, plain in parts, in others polished to obtain variety. The entrance, as in many of the most effective buildings of New York City, is by a grand yet simple semicircular arch. Though no particular style is followed here, the upper part has tall pilasters which run through three storeys in Palladian fashion.

The United Bank is a most effective building. It is an exceedingly massive pile of Triassic sandstone, nine storeys high, with a dentellated cornice and much rough stone on the four lower floors. The two entrance-porches project boldly, and their upper angles are fashioned into unique

ornament. A griffin holds the flagstaff at the angle. The little decoration there is on this edifice is well placed.

Mills Building.—No other structure in New York City, for whatever purpose erected, exceeds the Mills building in magnificence (*pl. 64, fig. 1*). It is true that the effect might have been still finer had the centre, instead of forming a deep recess except on the lower floor, been accentuated by greater height than the buildings on each side, and brought well to the front. But the two masses of equal importance which flank the portcullised entrance are each so large that they are separately the equals of any other office-block in the city. It is a rich structure in the style of the Early Italian Renaissance (before the orders were invented), with an abundance of arabesque panels in terra-cotta and two decorated belts of stone. The two lower floors are of stone; the remainder of the structure is of red brick and terra-cotta. Above the stonework rise three series of pilasters increasing in elaboration upward. Terra-cotta decorative panels are placed beneath all the windows, and there is a good cornice. The height of the building is more than 183 feet, and its cost was nearly three millions of dollars.

The Tribune Building, not long since the loftiest in New York City, is a plain but effective structure of red brick with stone dressings, eleven storeys in height. It is capped by a square and rather heavy-looking tower with a machicolated cornice. The turret is not central, but has two bays on one side and only one on the other. The front makes an obtuse angle, though this is not evident in a front view. The style may be called Gothic, though the lines are not so. Notwithstanding the too great prominence of the stone dressings and the too great height of the dormers, this structure will long remain one of the finest building-blocks of the city.

The Potter and Morse Buildings.—The Potter surpasses the Tribune building in height. Stores occupy the ground-floor, above which are ten storeys, besides an attic. No polychromy is attempted on this towering pile, which is entirely of red brick and red terra-cotta, except where ironwork fills in the lower floors between the piers. A cornice of great projection runs round the building two storeys below the top. The storey below this must be considered to form the frieze and architrave, and below are the immense composite capitals of a series of huge pilasters. Almost as lofty is the adjacent Morse building. This is a comparatively unadorned but effective composition of red brick with segment-headed openings throughout, the arches diversified with black brick, some lines of which run across the front. The Temple Court building, the two lower floors of which are of reddish granite and the rest red brick, rises to a height of ten storeys.

The Post and Mortimer Buildings are of cream-colored or buff terra-cotta and buff brick—materials which are now largely used in New York. The Potter building has eight floors above the pavement, besides a mezzanine, or *première étage* between the second floor (*première étage*



of the French) and the third. Instead of a series of brick or stone dormers above the cornice, backed by a mansard roof, both these buildings have a continuous attic-storey. In the Post building the windows of the storey below the cornice are square openings in the frieze. Below this large pilasters run through four storeys of round-arched windows, while the windows of the lower floors are square-headed. There is a reminiscence of Palladianism in the arrangement of the pilasters, yet there is too much originality to permit the term "Palladian" to be applied to it. The entrances to both these buildings are large round arches, and in the Mortimer building a stone staircase occupies one half of the archway, while the other half is taken up by the entrance to the ground-floor. Other office-buildings of New York City worthy of mention are the Telephone building, a striking composition of buff terra-cotta and buff brick, and the Equitable building, erected at a cost of eight millions of dollars—a huge structure in conventional Italian with orders which in some cases mask two storeys.

Pullman Palace-car Company Office-building.—As remarked on p. 378, the commercial edifices of Chicago both in magnificence and in upward tendency evidence a marked advance since the great fire of 1871. The Pullman Palace-car Company's building (*pl.* 64, *fig.* 2) is one of the finest of the later series of office-structures. It is a fireproof building, 170 by 120 feet, nine storeys high, built of Jonesborough granite, brick, and terra-cotta. The Central Safety Deposit Company's building—popularly known as the "Rookery"—is doubtless the largest office-structure in the world. It has a floor-area of about eight and one-half acres.

The Safe Deposit building at Baltimore—a combination of Romanesque and modern Gothic—and the Rialto, in the same city, are also worthy of mention.

Railway-stations have not, as a rule, risen in the United States to the æsthetic level they have reached in Western Europe; with a few exceptions, they are so excessively utilitarian that they often fail in convenience. Many stations—or "dépôts," as they are often called—are mere sheds for the shelter of the trains, with sheds across the end or at the sides as offices and waiting-rooms. By the combination of a grand arched roof with a palatial hotel many European termini and some way-stations have attained monumental dignity, but this combination has scarcely been attempted in America; rarely is a hotel combined with a dépôt.

A few stations, however, must be considered monumental piles. Among these is the Broad Street terminus of the Pennsylvania Railroad at Philadelphia, a structure of red brick and terra-cotta in a style approaching Gothic. Some portions, especially the entrance and the upper storeys, are very good, and the façade is effective, though injured by the lowness of the ground-floor and by the rectangular windows which are inserted into the tympani of the large pointed arches of the principal floor. The two tiers of windows enclosed in this arcading light a large hall, and thus the arches could have been appropriately filled with tra-

ceried and mullioned windows. The detail of the large waiting-hall is very meagre. Large pointed arches have no mouldings around them, but are set with small plain stones around arch and jambs alike. The wood-work of the ceiling is an echo of the carved trusses of fifteenth-century English halls and churches, while the rectangular tower which rises at the angle and bears a large clock is in many respects an imitation of the campanile of St. Mark's at Venice. Perhaps the most effective part of the structure is the staircase leading to the waiting-room, where, as well as in the walls around the station, there is some very good work in buff and red brick. Were the dépôt spanned by one grand arch, instead of by three small arches, the interior effect would be very fine.

Another of America's finest stations is that of the Pennsylvania Railway at Chicago, and still another will be that of the Baltimore and Ohio Railway Company on the left bank of the Schuylkill, Philadelphia.

The Chicago and North-western terminus at Chicago is a symmetrical structure with a most effective sky-line. The central entrance is not very well emphasized, nor is there much to observe in the lower storeys; but at each end of the façade rises an octagonal turret with a high spire, and in the centre is a tower flanked by two half-pediments. A series of nine square-headed openings run across an upper storey below the pediments, and the tower, having other similar windows, is continued upward with flat angle-buttresses, and has small openings above and below the clock. Between the angle-turrets and the tower the outline is broken by large dormers and chimneys.

The American Express Company's building at Chicago is prominent for its massiveness, as are all other works by Richardson. It is in the French style of the thirteenth century as exhibited in civic buildings, and the openings throughout are lintelled, some of them being as much as seven feet wide.

The Boston and Albany railway-station, Boston, is a severe structure of brick, with stone quoins to angles and windows, terminating above in a high roof; and the Boston and Providence dépôt, of the same city, though less lofty than the last mentioned, has a fine entrance through a row of tall Gothic arches, and is adorned with a lofty square tower-clock having a machicolated cornice and a tall roof.

Waterworks.—Worthy of mention are those structures connected with waterworks, which in some instances possess considerable architectural merit—as, for example, those of the New York Croton Waterworks and the elaborate brick pumping-station recently erected at the Spring Garden Waterworks, Philadelphia.

Exchanges: *The Produce Exchange*, New York City, is an immense rectangular structure with three superior series of arches, and has a tower connected with the main structure. The arches of the lowest series are large, and are Those of the second tier are stores of windows. Above this

pierced with many square windows. The cornice is a most bold and effective one, and over it rises the upper tier of arches, forming the windows of the attic storey. The effect of these long ranges of semicircles, each range unlike the one above it, is very fine, although the partial disappearance of the attic tier behind the great projection of the cornice somewhat detracts from the effect of a near view. The tower, with its machicolated cornice and massive proportions, is a noble object in both a near and a distant view. The exterior is of red brick and red terra-cotta, and medallions and other decorative features in the latter material are freely introduced. The least admirable features are the columns of the entrances, the gray (granite) color of which does not harmonize with the red of the rest of the façades and gives a patchy appearance to the lower floor. Taken as a whole, this structure is one of the finest of the many grand new buildings which adorn New York City.

Richardson was *par excellence* the "Romanticist" of the United States. Full of genius and energy and untrammelled by precedent, he endeavored to make popular a phase of round-arched Romanesque which has often been called "Byzantine," but which has little of the Byzantine about it, picturesque, powerful, and often beautiful, though he could make it.

The Cincinnati Chamber of Commerce, one of Richardson's works, expresses fully the fact that it encloses a large interior hall. This is marked by five large windows on the side and three at the end, the latter embraced beneath a grand arch which sweeps across the façade from one circular angle-turret to another. A range of smaller windows, two over each of the large ones, runs around above the latter.

The Galveston Cotton Exchange, Renaissance though it is, must not be classed with the ordinary American vernacular. The pilasters which rise through three storeys are only faintly like the orders, notwithstanding their Corinthian capitals, and have everyway the effect of piers. Round arches are prominent except in the second storey, and the windows are grouped in pairs and triplets. All the carved decorations are taken from the cotton-plant.

Exhibition-buildings, huge though they are, are ephemeral in their nature. The great Centennial Exhibition at Philadelphia has faded away like the fabric of a dream, and of its ironwork have been manufactured railway-stations for more western cities. The crowd of accompanying buildings—some of them, as Machinery and Agricultural Halls, almost rivals in size of the main structure—have disappeared also, and some of the smaller ones form railway-stations, halls, etc., in various places. The sole remains, save bridges and smaller objects, are Memorial Hall, already noticed (p. 372), and Horticultural Hall, an ornate, flimsy, and highly-colored piece of semi-Saracenic architecture.

Among the local exhibition-buildings may be mentioned the Massachusetts Charitable Mechanics' Association at Boston. It stands upon a triangular site, and the outline is varied to suit the location; so that

some good grouping is obtained. There is an effective low tower with an open upper storey, and altogether as much effect is obtained as is possible in a structure which must be comparatively inexpensive. The New England Manufacturers and Mechanics' Institute, another exhibition-building, is the largest structure in Boston. It has an almost unbroken outline at its base, with higher central storeys, in the fashion set by the earlier exhibitions of London. It covers eight acres.

The Music and Exposition Hall, Saint Louis, Missouri (*pl. 62, fig. 2*), erected between 1883 and 1885 at a cost of six hundred thousand dollars, is perhaps the finest and most complete structure of its class in the United States. It covers an area 328 feet long by 455 feet deep, and is three storeys in height. The basement-storey is of massive gray stone and the superstructure is of pressed brick laid in red mortar, with trimmings of buff sandstone and terra-cotta ornamentation; the whole is crowned with a high slate-roof terminating in hammered-glass skylights. The interior arrangement of the main floor consists, in addition to the various offices, reception-rooms, and parlors, of a grand Music-hall, 225 feet long, 120 feet wide, and 85 feet high, with a capacity for seating forty-two hundred persons; an Entertainment-hall, 60 by 120 feet, accommodating fourteen hundred persons; and two Exposition-halls, each 84 by 240 feet, intersecting a grand nave, 120 by 328 feet, and communicating with the rockery and floral departments, which are 120 by 64 feet.

Dwellings.—A sketch of the various phases of style that have invaded this country or have been evolved in it has already been given. For a generation after the second decade of this century everything noteworthy was Greek. Country and suburban dwellings were built *distyle in antis* or *tetrastyle in antis*, with two or four stout board pillars reaching through the full height of all the storeys of the house, which did duty for a cella, and by their size blocking up the piazza. To this succeeded the American country vernacular with its jig-saw work and monotonous details.

But each of the great cities had a style of dwelling-house peculiar to itself. Boston had its convex or swell fronts, repeated one after another along the length of a street; Philadelphia had its white marble sills and steps contrasting in color with plain red-brick façades; while New York affected the more pretentious "brownstone" with half-basement, high "stoop," and pilasters or columns flanking the entrance. From the middle of the fifth decade of this century New York dwellings became more ambitious, if not always architecturally better. Some of the best are the work of Frederick Diaper, and may be found in University Place and other localities now in the interior of the city.

About the same epoch Philadelphia began to use brownstone and white marble in the more expensive class of dwellings; the marble palace is still in the minds of many the ideal of the beautiful, though perhaps no material lends itself less readily to the effects obtainable in an ordinary dwelling-house. But tastes have changed, and we are in the midst of a new movement. The great departure has been the employment of a

variety of materials rather than of any special series of ornaments, and many architects who use this variety wander far from eighteenth-century ornamentation, and even from any of the styles of the past. Houses with a ground-floor of stone, a second floor of brick, and a third covered with tiles or shingles; houses with fronts covered with shingles almost to the ground; houses covered above with half-timbered work, while below they are of stone or brick,—are to be seen on all sides, and such structures, with broken outlines and varied materials, are popularly styled "Queen Anne." Amid such a variety there must be some beauty. The talented designer, no longer trammelled by uncongenial rules, produces the most picturesque effects, but the general public is not appreciative of the picturesque sufficiently to distinguish it from the grotesque, which is also extensively produced.

Old Colonial.—The difference between the true Queen Anne or early eighteenth-century style of England and that practised in this country during the colonial period is not a great one; nevertheless, the Centennial Exposition induced Americans to study the antiquities of their own country. The gambrel or curb-roof and shingles as an exterior wall-covering came again into favor, and piazzas were contracted into porticoes supported by thin Doric posts spaced widely apart. As with other manners, so with "old colonial," the effect depends rather upon the artist than upon the style. The residence of Mr. Coleman at Newport, Rhode Island (*pl.* 68, *fig.* 1), may be called old colonial, though it is unlike and incomparably superior to anything erected in the colonial period. The effect of the two superimposed loggias with their two columns each, and of the portico to the right of them, is most picturesque and striking. But, while a so-called "old-colonial" dwelling may as a whole be far better than anything erected in colonial days, it may also be far worse and more pretentious, and examples of this are not rare.

The shingle as a substitute for the unvarying clapboard is decidedly an improvement; but when it takes the place of stone it is an anachronism. Moreover, though applicable enough to small cottages, it is, from its suggestion of diminutiveness, totally out of place in a large building. Indeed, structures in which the shingle and the clapboard are prominent cannot be considered architectural except in a sense which will include every wooden structure.

The convenience of the gambrel-roof cannot be denied, and its effect in front is not inferior to that of the mansard or French roof; but its terminal lines are decidedly inartistic. It may be excused occasionally as a convenience or a quaintness, but must be used in moderation; and when a house consists entirely of one long straight shingled roof of this kind surmounting a low wall pierced by small windows of a width exceeding their height, the *ensemble* is not architectural. But such incongruities may be expected as a reaction against the red-brick and clapboard dulness of past decades.

House-planning.—Far more study is now given to the details

the plan and the elevation than was the case a few years ago. Instead of the set pattern of former times, the position of every door and every window is studied with an eye either to interior comfort and convenience, to the aspect, or to the view obtainable, and thus the exterior is made to express these internal needs.

Regularity of Plan.—It has been said that the history of house-plan-ning is the history of civilization. In nothing is the simplicity or luxuriousness of the age more evident than in the arrangement of private dwellings, and nowhere else does the influence of a passing fashion imprint itself more fully. Not more than a generation ago a plain square house with oblong rooms whose height bore some geometrical proportion to their width, and whose fireplaces and windows were arranged with due regard to symmetry, was esteemed the height of comfort and good taste. The entrance was in the exact centre; the parlor was the counterpart of the library; the flanks of the structure corresponded.

Modern Plan.—The modern age is weary of that excess of symmetry which it inherited. The modern house, even if of comparatively small size, is complex and irregular in its plan, each room having some distinctive characteristic. When the designer is an artist who avoids aimless attempts at quaintness, and who studies to take advantage of aspect and to arrange the walls and openings of every room so that each may most completely fulfil its purpose, so that there is a place for every essential article of furniture, an outlook over the best view, and a cosy corner wherever necessary, the result cannot be otherwise than highly satisfactory.

The Fireplace.—The progress recently made in the decoration of the fireplace may be cited as an example of what might be done in every other feature of our homes. The open fireplace was the earliest substitute for the ancient fire upon the floor beneath an opening in the roof. From earliest times the fireplace was surrounded by decoration, and in large mediæval halls the chimney-piece was a most pretentious affair. Later a formal mass of marble slabs surrounded the fireplace or was placed around a register or where a fireplace should be. These marble mantels were ordered from the pattern-book, and were never objects of art. Recently, architects and decorators have made a study of the fireplace, have encased it in tiles, and have surmounted it with cabinets and mirrors, often making it truly an artistic feature. It is to be regretted that the dislike of stock patterns in marble or stone has led to the comparative disuse of those materials, which are certainly susceptible, either by themselves or in combination with terra-cotta and moulded brick, of as much richness of color and variety of design as can be obtained in wood, while their incombustibility gives them a manifest advantage.

The Hall.—Another change, and an important one, in plan is the rehabilitation of the hall. Instead of the narrow entry, we have now the ample hall with its cosy fireplace, serving for an informal place of gathering for the family. In houses a large mansions this

revived prominence of the hall is a blessing, but in small houses for permanent residence it is the reverse; for the hall, with its fireplace, open to the staircase and undefended from the outer air by a vestibule, is too often made to do duty for a sitting-room, to the manifest discomfort of the inmates during winter. Detached cottages of eight to twelve rooms provided with a hall of this kind usually show their shortcomings in the winter by a temporary vestibule upon the piazza, which detracts greatly from the effect of the exterior. A third change is in the direction of low ceilings. There is no doubt that the fashion of the last twenty years built storeys too high for comfort, but some recent dwellings have rooms too low for either comfort or proportion.

Country Dwellings.—In all small towns, and even in suburbs of large towns, wood has until recently been the chief building-material of America, except in localities where, as in the neighborhood of Philadelphia, bricks are cheap and stone is to be had for the quarrying. The frame house built of rectangular studs and posts, sided with clapboards, and lined with plaster has already been mentioned as the American vernacular. Very little was done to evolve picturesqueness out of this class of house, which yet often attained considerable dimensions and afforded much interior luxury. Of late years architects have so worked upon the wooden house that they have almost transformed it by the admixture of other materials. Solid wood is architectonic, and buildings constructed of sound timbers have proved their monumental character in Europe by an existence of several hundred years, but the wooden vernacular house of the United States was not so built. However large in its proportions, however comfortable in its interior, it was but a board structure, and almost all ornamentation was of boards an inch thick.

In houses erected in the country during the last decade no line of distinction can be drawn between the wooden house and that of brick or stone, since stone, brick, shingles, clapboards, and an imitation of the half-timbered and plaster-covered construction in use in Europe during mediæval times may occur in the same building. Terra-cotta may be distributed about the façades, carved stone may be present here and there, and glass, arranged in odd patterns in the windows, and even set in broken bits upon the plaster of a wall, is made to add to the effect. Yet, notwithstanding the honest, and in many cases successful, efforts to build a country-house at once artistic and comfortable, it cannot be said that America has yet fully learned the requirements of such a residence as distinguished from one which, whether in city or in suburb, is situated upon a lot not much wider than the house itself.

When large houses are erected upon comparatively narrow lots, a certain amount of horizontal compression accompanied by vertical extension is unavoidable and appropriate. Such houses may consist mainly of structures three or four storeys in height, with little to harmonize them with surrounding scenery. They are almost city houses, and need height to give both importance and accommodation. But in a house surrounded

phia—and, it may be added, of Baltimore also—has until the last few years been the want of all architectural features. Street follows street in monotonous rows of red pressed-brick fronts with oblong openings, sills of white marble, and steps of the same material. The steps project upon the sidewalk and the brick is frequently painted. Green shutters, down-pipes discharging upon the footway, and cellar-ways closed with green trap-doors remain to show that Philadelphia is a city of the eighteenth century. The monotony of the elevation is almost equalled by that of the plan. The houses are deep and narrow; at the rear is an addition often deeper than, and in many cases of equal height with, the main building. The first floor of this addition contains the kitchen, while in the second floor there is invariably a family sitting-room, often the largest room in the house.

Since the Centennial Exhibition (1876) considerable variety has crept in, but even yet, although country and suburban houses exhibit so much freedom, the city-house of Philadelphia is hampered by old traditions. The lack of the smallest space between the building-line and the street proper, with the consequent projecting steps, is destructive of magnificence even in houses whose fronts are filled with ornament and whose openings are well arranged. Yet the average character of Philadelphia street-houses has vastly improved within the last decade. The newer street-residences have for the most part affected the Queen-Anne manner, but there is now evident, here as elsewhere, a tendency toward the earlier Renaissance, as well as an inclination to throw off all trammels of style and to revel in wild conceits.

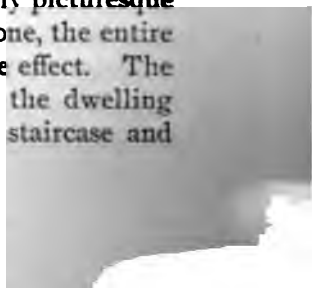
The most architectural dwelling-house quarter of Philadelphia proper is the south-western. Walnut Street here exhibits one continuous row of handsome and costly façades, mostly of brownstone, marble, or of other kinds of stone. In adjoining streets brick predominates, and side by side with structures in the older Philadelphia manner—the red brick varied only by sills and steps of white marble—rise brick dwellings with projecting bays and oriels, with quaint or picturesque porches and loggias, with dressings of stone and terra-cotta, with tile roofs and ornamental tiling on the walls, and with curious, and often effective, carving in stone. Farther northward, Spring Garden and North Broad Streets have many fine houses, and South Broad Street is not behindhand. In many of the north-western portions of the city, as well as to a considerable extent in the western and southern, the architects have invested with the charm of some variety the numerous semi-detached houses and still more abundant continuous terraces of those quarters. In the more modern parts the whole street is not of one pattern: each block, at least, differs from the next; and the attempt is made to diversify even the block by some accentuation of the end and central houses.

New York City has probably for ever abandoned its regulation front of brownstone, and has entirely—at least, in its better buildings—cast aside the American vernacular. A great change has taken place, and variety

and picturesqueness have become the prominent characteristics of a New York residence-street. In the greater part of these new houses, classic—or, rather, Free Classic—motives predominate. The horizontal lines are emphasized, the perpendicular are subordinate, but the details are derived from almost every phase of the round-arched, lintelled, and even pointed, styles. Gothic has been least used, and, unless liberally mingled with Renaissance, has been least successful; yet it has been attempted in several instances. Some of the finest modern mansions belong to the early phases of the Renaissance—the Renaissance as distinguished from the Palladian and *baroque* phases which succeeded it—the Renaissance of the *cinquecento* in Italy and of François I. in France.

No description of New York City dwellings can avoid mention of the Vanderbilt houses, some of which are exceedingly fine, though the residences built for W. H. Vanderbilt, and consisting of two blocks of equal size and similar detail, devoid of any prominent architectural feature, cannot be accounted the best. One of the most noteworthy houses to be found in any city is that of W. K. Vanderbilt (*pl.* 66, *fig.* 2). This is a rectangular pile broken in front by a projection containing the entrance, and continued toward the rear by a portion one storey lower. The style chosen is the latest phase of French Gothic as exhibited at the Palais de Justice at Rouen. The projecting centre contains a grand entrance with deeply-recessed and moulded jambs, having above it a balcony enclosed beneath a deeply-recessed ornate arch. Upon the south front there are a three-sided bay and a semicircular oriel-window, both highly decorated. These ornamental features are set off by broad plain surfaces. The dormers or window-gables are rich and the sky-line is good, while a turret which rises to the left of the principal entrance adds to its importance. The large dormer over the entrance, which has flying-buttresses and pinnacles carried on corbels, is the least satisfactory feature. Two mansions belonging to other members of the Vanderbilt family are in the French Renaissance, free from the trace of Gothic observable in the dwelling last described, and are constructed of brownstone and red brick instead of being in one material. The disposition of the circular angle-bays, judiciously intermixed with square and angular projections, gives to these houses relief and renders them both conspicuous and effective. The residence of Cornelius Vanderbilt is another French Renaissance structure, and the composition of the whole is a most pleasing one.

The Tiffany House is the climax of singularity in outline, members, and color. The balcony which spans the great recess in front, the bold semicircular arch of the broad carriage-entrance which leads into the interior court, and the recessed balcony at the west end are highly picturesque and satisfactory features. Except a small amount of bluestone, the entire exterior is of brick of a peculiar brown tint, giving a unique effect. The chimneys consist of attached cylinders. The entrances to the dwelling open into the carriage-way, in French fashion, and a stone staircase and



balconette underneath and upon the right side of the entrance-archway give access to a smaller front door. These few examples must suffice us; yet New York City has hundreds of houses which, though as a rule smaller than the Vanderbilt houses, are well worthy of attentive study. The ordinary twenty-five foot lot on the principal avenues as well as in many other streets in their vicinity has been made the theatre of an endless change of scene, producing an *ensemble* totally unlike the monotonous magnificence of Paris or Berlin and unlike the conventional brownstone fronts of the New York of twelve years ago.

There is considerable variety in and about Boston, but many of the newer houses of that city are thoroughly Queen Anne in style. The older Boston style of residence with a convex or "swell" front is much less usual now than it was a few years ago, but is by no means extinct. It is monotonous when repeated in long rows of four- or five-storey structures, but it is in all cases superior to the Philadelphia unadorned straight front. The angular bay-window is now in vogue.

The architecture of the private dwellings of the cities of the West is as a rule superior to that of their public buildings, though their best may scarcely equal in design or construction the best of New York City, Boston, or Philadelphia. The swell front of Boston has been extensively copied in St. Louis and Chicago, and is generally used upon houses two storeys in height; for in these Western cities ground is less costly than in the East, and more space is occupied. Until very recently the best private buildings of the West partook largely of the spirit of Victorian Gothic, which certainly was a vast improvement upon the mansard roof, and even upon the swell front. Many of these houses can scarcely be said to have Gothic detail, though they cannot be referred to any other style. They eschew the pointed arch, having square openings spanned by lintels, continuous sill and lintel courses, and no projections on the walls.

The ordinary street-residence of every large city has some peculiarities. To avoid the sad effect of earthquakes, almost all the residences in San Francisco are built of wood, though within certain limits the walls must be of brick, to obviate the risk of fire. In the more pretentious dwellings what is known as "rustic" boarding is used to cover the exterior. The horizontal joints of this material simulate those of stonework, and the resemblance is purposely heightened by placing short pieces at the angles of the building to imitate quoins, and by painting and sanding the surface (*pl. 67, fig. 1*). Yet large sums of money are often expended on these residences, some of which attain palatial dimensions and exhibit lavish and well-designed ornamentation. Some of the more recently built dwellings of the metropolis of the Pacific Coast prove that the "Queen Anne" manner has made its way there, also that stone is employed to an **extent unthought of six years ago.**

The architectural effect of a city to a considerable extent depends upon its plan. Most American cities are laid out with the streets at right angles to each other, and this means long perspectives are obtained

and whatever there is of palatial shows to full effect. On the other hand, picturesqueness is sacrificed and convenience is minimized. Washington is in this respect a delightful exception to other cities. It is true that its broad streets are laid out at right angles, but they are crossed by a second system of streets at an angle of sixty degrees, giving convenient access to all parts. The triangular pieces left at the intersections are formed into gardens, and squares and open places abound. Taken as a whole, with its broad well-paved streets lined with magnificent dwellings set well back from the street-line, its grand public buildings—the seats of the governmental departments—its fountains and its gardens, Washington deserves its title of the “Paris of America,” and is certainly the most beautiful city in the United States. The view along Connecticut Avenue will vie with that of any other street in the world; and if Pennsylvania Avenue still bears traces of a humble origin through the presence of some lowly structures, it has yet many fine ones which greatly enhance the impressive prospect terminated by the Capitol. The unfortunate yet talented L’Enfant, who laid out the city, may, now that his work is brought into relief by lines of handsome villas, receive some share of tardy praise.

Apartment-houses.—Within the last two decades apartment-houses and flats have become popular in many American cities, especially in New York, where they form a majority of the new structures and are occupied by classes that heretofore have considered a separate dwelling indispensable. The principal causes of this change have been the owners’ desire for larger returns and the occupants’ need of comparative proximity to business. Furthermore, in a properly-planned and well-constructed apartment-house there is privacy combined with the security furnished by the presence of other families under the same roof; labor is lessened and many inconveniences are avoided; speaking-tubes afford means of communication; automatic door-openers admit the visitor; elevators lift or lower both the occupants and their goods; ash-shoots dispose of the refuse; common laundries lighten the labors of wash-day; and well-ventilated trunk-rooms accommodate the baggage. Where proper regulations are enforced by municipalities with regard to light, ventilation, and fireproof qualities, the apartment-house is in every way preferable to the narrow terrace-house with three or more floors, such as is still usual in many cities.

Most large apartment-houses are so constructed that there are more storeys in the rear of the building than upon the front, the additional storeys being accessible by steps from the principal floors, and so arranged that, while some of the apartment-suites are in communication with only one of the rear storeys, others are in communication with two.

Red brick and red terra-cotta are the materials most commonly employed in these tall piles, but the two or three lowest storeys are often of stone, while copper or iron is introduced in the bay-windows. Their varied materials give a chance for polychromatic display, and much of the effect depends upon the color-sense of the designer. Among the most

noticeable New York City apartment-houses are the Berkshire and the Navarro group.

The Berkshire (pl. 66, fig. 1) has nine floors above the basement, which is well above ground. The two lower floors are of gray granite with tooled edges, relieved by dressings of red stone; the upper floors, of red brick, with some red-stone dressings. On each front projects a copper elliptical bay five storeys in height, while a three-sided bay of the same material also exists on the north front. On the east front the place of this latter bay is taken by an effective series of balconies and brackets, the railing iron, the rest stone. Upon the upper floors and over the surface of the brick gables or large dormers there is a network of brick pilasters parted by moulded string-courses. The general appearance of this building is good: there is just enough asymmetry to break the monotony of regularity. Those who make the term "Queen Anne" cover things undreamed of in Queen Anne's century may claim this structure, but it comes far nearer to Flemish Renaissance, though with features that can be found only in modern work.

The Central-Park Apartment-houses are probably the most extensive structures of the kind in the world; they include several huge fireproof buildings, and are said to have cost upward of seven million dollars. In style these "Navarro" flats, as they are usually called, are intended to be Moorish. The arches of the loggias are of horseshoe shape, the capitals of the columns are decidedly Saracenic, and other details smack of the style; yet the general effect is that of a Renaissance building rather freely treated. The succession of superimposed horizontal lines and the numerous series of windows necessary in a lofty apartment-house will not permit such a structure to assume any resemblance to the comparatively low, spreading, dome-covered buildings erected by the Moors and Arabs. Eight series of loggias—one at each end and three on each side—separate as many distinct structures and admit an abundance of air to the interior court, which, large though it is, seems narrow on account of the great height of the buildings around it. At each angle there is a circular turret, while between these the roof-line is broken by gabled dormers of brick which leave little of the roof to be seen. Most of the windows have square heads, but those of the upper floor are semicircular, and near the angles are groups of windows under relieving-arches. There is much variety in the plan, some of the dwellings occupying the whole of a floor of one of the separate blocks, while in others there are two dwellings upon a floor.

The Osborne, consisting of eleven storeys, is considerably higher than the Navarro, and is probably the loftiest of New York's great apartment-houses. It is a stone structure throughout, brownstone in courses, the rock-face showing from top to bottom. The Dakota is of white brick without any attempt at polychromy, and it must be confessed, huge though it is, that it looks tame compared with such a building as the Berkshire or the Navarro. The Dakota is said to be one of the most complete—as it


certainly is one of the largest—structures of this class. The Chelsea is one of the finest of these habitations. It is of red brick, and presents to the street seven tiers of balconies.

Flats.—As ground became more valuable and rents increased, the private house became narrower and cheaper, until—in some cities, at least—it gave way to the flat or tenement-house. Unfortunately, the old division of the ground into lots of 25 feet in width has hampered the flat as it hampered the private house, and it is only in first-class apartment-houses—that is, houses built to accommodate families of abundant means—that such width is occupied by the entire structure as to permit all the rooms to be well lighted and ventilated, and to give room for ample staircases and halls. In New York four families are usually compelled to occupy each floor of a tenement-house constructed upon a lot 25 feet wide and 100 feet deep. The entire space is built upon, with the exception of that of the narrow shafts which are supposed to give ventilation to the water-closets, and at the same time are too often made to do duty as light-wells for some of the rooms, though this is now forbidden.

Though the examples of apartment-houses given are all from New York City, where that class of building is more abundant than elsewhere, Boston has also its apartment-houses, such as the Warren, the Hotel Cluny, the Boylston, and the Hotel Elliott, Boston Highlands. Several structures of this kind exist also in Chicago, among which the Beau-rivage may be expressly mentioned.

The Tenement-house and the apartment-house differ in degree only, and all grades may intervene; yet there could hardly be a more undesirable residence than the New York tenement-house as built for the occupancy of the workingman, while those structures of handsome external appearance which are occupied by many tenants of the lower middle class are devoid of the charms of home. When flats intended for one family are converted into boarding-houses or let to sub-tenants, neither health nor comfort can be expected. The Astral Tenement-house, New York City, is intended for a class similar to that reached by the Peabody buildings in London. The staircases ascend in open loggias, and the circular heads of the entrances and upper windows diversify the otherwise plain exterior.

Hotels.—The United States is the land of big hotels. The size of the country, the universality of railroads, the great development of the distributing industries—which here bear to manufacturing and production a proportion far larger than in any other country—combine to produce an immense floating population, and hence to favor the construction of huge caravansaries. Such aggregations of sleeping-rooms, with their accompanying public offices, do not lend themselves readily to much architectural effect, especially since the attempt is always made to economize space to an extent which cannot be equalled in a private house. Generally, American city hotels consist externally of series after series of rectangular windows little broken by projections and seldom diversified by



loggias, balconies, or other features which would tend to break the monotonous regularity. In the country or at the seaside the hotels are usually surrounded by a continuous, or almost continuous, veranda, which is not seldom repeated on the floor above.

The recent taste for eccentricity of form and variety of outline has done much to relieve hotel-architecture of its monotony, and has produced, especially in country and seaside resorts, some picturesque structures; yet it still remains a fact that, compared with private or even with apartment-houses, large hotels usually and in proportion to their size lack grace and artistic merit. Perhaps the dome of the St. Charles Hotel, at New Orleans, is equal to any bit of hotel-architecture in the country.

The hotels of New York City rival the apartment-houses in upward extension, but are architecturally greatly inferior to them. The celebrated Astor House has at least the merit of not attempting too much. It is a granite pile of Egyptian severity, relieved only by Tuscan pilasters at the angles, the plainest of entablatures to crown the building, and a massive Doric entrance-portico. Windows are few, small, unadorned, and rectangular, but the attic—or, rather, frieze—has numerous windows. Most of the other hotels have more pretence to ornamentation, but are much more ordinary. The Fifth Avenue Hotel is but several series of superposed Italian windows with the usual mouldings and consoles, and the same remark will apply to many more. The Hotel Dam shows in its bay-windows of brick the influence of the Queen Anne manner; but one of the most conspicuous pieces of modern hotel-architecture to be found in the city is the Plaza Family Hotel. This is a peculiar structure. The façade is most conspicuously panelled with oblong panels filled with elaborate carving; these sculptures predominate in the general effect of that part of the structure which is below the roof.

Hotels are not very conspicuous in Philadelphia. The Continental and the Lafayette are the largest, and the latter is still the tallest residential structure in the city. The Continental loses in effect by the absence of a conspicuous entrance. The West End and the Bellevue are both quiet, unpretentious structures of red brick.

The Brunswick, Boston, is architecturally one of the finest hotels in the country. Three-sided bays, some of them carried on bold corbelling, alternate with straight surfaces of wall in pleasing variety, and the entrance is well accentuated by three round arches led up to by a magnificent staircase. The Vendome, of white marble, is another fine structure, of eight storeys, of some architectural pretensions.

Chicago's great hotels, the Palmer House and the Grand Pacific, were at the time of their erection the largest hotels in the country, but they have been surpassed by the huge pile of the Palace, at San Francisco, probably the largest city hotel in the world. The Palace is now connected by a covered bridge with the Grand Hotel, which was the largest in the city previous to the erection of the former. All the capitals, bases, and mouldings of the thousands of pilasters and columns which are spread

over the interior and exterior of the Palace are Doric except in their proportions. A series of seventy or more bay-windows run through all the storeys above the stores which occupy the street-front of the ground-floor. Each storey of each bay is adorned with Doric columns of wood, which differ only in slight variations in height, and each bay is a replica of its neighbor. In the interior there is a grand courtyard, surrounded by tier after tier of galleries, each supported by Doric columns, while the central space is covered with a plain glazed roof. The Grand Hotel is somewhat *rococo* in style, but has some variety in outline and is decidedly superior to its towering neighbor.

Suburban and Country Hotels.—Among the great number of hotels dotting this vast country from the heights of the Kaaterskills to the edge of the Atlantic, it is hard to choose those which should be mentioned.

Ponce de Leon Hotel.—The largest and most magnificent hotel in the world is the Ponce de Leon at St. Augustine, Florida (*pl.* 69, *fig.* 1). It is built in the style of the Early Spanish Renaissance, which was strongly influenced by the Moorish spirit. The main material used for the building—towers and all—is a shell-deposit (*coquina*) which, mixed with cement, forms one indestructible composite. The walls were not built, but were cast or moulded as they arose, and they thus form one vast monolith of a light mother-of-pearl color that glitters in the sun and turns to dark blue the shadows cast upon them by the deep reveals. The main coloring is a bright-salmon terra-cotta, which is principally used in the ornamentation. This is very rich on the towers and in the court, but the outer walls, following the style of the architecture, are simpler, the lively-colored terra-cotta appearing only in the coignes, in the arches and verandas, and in the corner towers. The main entrance is rich with faience. The roof is of dark Spanish tiles. The very material conforms to the natural conditions of the place, and as a contrast to the flat and monotonous country around the building is as varied in outline as possible. The hotel is built around a terraced court about which runs a corridor. The court, which is of tropical splendor, is adorned with fountains and with palms, vines, roses, and other luxuriant plants. A unique feature of the court is the great grilles, or cages, rising from the top of each side-entrance to the corridor of the third storey. These grilles are filled with climbing plants and gorgeous flowers, among which flash birds of brilliant plumage. But perhaps the most charming vista of this magnificent structure is presented by the interior of the rotunda, which is of four storeys, around each of which there runs a corridor with different arches and columns. The rotunda is supported by four great piers and eight oak columns, on each of which are carved four lifesize caryatides. The great dome is decorated with figures carved in high relief, and above these are allegorical paintings representing the history of Spain and Florida.

The Alcazar at St. Augustine (*pl.* 69, *fig.* 2), though differing in detail from the Ponce de Leon, follows the same general architecture. The great façade presents a pleasing variety of towers, pavilions, minarets,

arcades, and roofs of old Spanish tiles. The Alcazar, as an adjunct to the Ponce de Leon, serves the purpose of providing amusement and occupation to the guests of the hotel. There is a crescent arcade of booths opening on the Alameda. The quadrangular court of the interior, a tropical garden, is surrounded by a covered arcade, behind which are numerous bazaars.

The Saratoga Hotels, at Saratoga Springs, New York, are among the largest, the most costly, elegant, and comfortable, in the world. The Grand Union is a magnificent structure of brick and iron of modern style, with a street-frontage of 2400 feet. Along its entire eastern front of 800 feet runs a graceful iron piazza of three storeys. The rear rooms open upon the handsome interior court-square, beautifully adorned with trees, shrubs, and flowers. The United States Hotel constitutes one continuous line of buildings, six storeys high and over 1500 feet in length. It is Norman in style, and its mansard roof is embellished with pediments, gables, dormer-windows and crestings, and three large pavilions. Congress Hall is built in the most substantial manner of brick with brownstone trimmings. Its walls are 20 inches thick, and are hollow in the centre. The roof is mansard, with three pavilions. The hotel has a western frontage of 416 feet, with a high promenade piazza 20 feet wide and 249 feet in length. Two wings, each 300 feet long, extend from the western front, and at the rear ample piazzas overlook the interior court.

Two fine hotels are the Wissahickon Inn and the Devon Inn, in the suburbs of Philadelphia. The first is without a conspicuous feature either centrally or peripherally placed, yet, with its extensive piazzas and long fronts, fits well with its picturesque surroundings. The Devon, though more pretentious and lofty, is yet the least attractive structure of the two. The Montezuma Hotel, Las Vegas, New Mexico, has its principal angle accentuated by a picturesque lookout-tower. The Raymond, at Pasadena, near Los Angeles, and the Del Monte, at Monterey, are two among the many fine hotels which have recently been erected in California to accommodate summer tourists and visitors. Among the mountain-hotels of the East may be mentioned that at Cresson, on the Pennsylvania Railway, and the Kaaterskill, on the summit of the Catskills, while the West End at Bar Harbor is sufficiently unlike most seaside hotels to be noticeable. The Nantasket at Nantasket Beach, the Brighton at Coney Island, and the Manhattan Beach Hotel, Long Island, may be cited as examples of the ordinary seaside hotel—all piazza and pavilion.

Memorial Monuments.—Few monuments are really architectural piles. The obelisk form is much favored, but American obelisks are too large to be monolithic. That on Bunker Hill is 221 feet high, with a base 30 feet square, while the Washington Monument at Washington, D. C.—the loftiest tower in the world—rises 555 feet above the marshy banks of the Potomac. Its foundation is 126 feet square, with walls 15 feet thick, and the shaft measures $34\frac{1}{2}$ feet square at its summit, just below the terminal pyramidion.

Bartholdi Monument.—The grandest monument in the United States, and the most colossal statue in the world, is the great figure of Liberty which rises from a rock in New York harbor. The pedestal is $177\frac{3}{4}$ feet high, while the statue itself—a work of the famous Bartholdi—reaches a height of 152 feet 2 inches. The weight of this immense statue, before which the Colossus of Rhodes sinks into insignificance, is 200,000 kilogrammes, of which the copper *repoussé* work of the statue itself weighs 80,000, and the iron supports 120,000.

But statues must not be included among architectural works, and unfortunately it is seldom the case that their pedestals or other environment have received the attention they deserve, and but few of the numerous monuments erected need be mentioned here. An exception may be made in favor of the base of the Farragut Monument in Madison Square, New York City. The statue of the famous commander stands upon a kind of stone settee, the seat of which is interrupted by a tapering base-stone. The arms of the seat are carved into dolphins veiled by water, and carved billows run across the back of the seat and the base of the statue, against which lean two figures in low relief.

Conclusion.—From the foregoing pages it will be seen that the history of Architecture is almost, if not quite, coeval with that of civilization. The peoples of European blood who inhabit the American continent are the heirs of the Architecture of all preceding ages, but it is only during the last few decades that the study of the styles of former ages has entered into the culture of the people of this country. At the present date such studies are more or less in the mode, and to them we owe various passing fashions, each started in the hope of attracting attention through novelty. But each of these manners, whatever be its name, has more nominal than actual resemblance to the ancient manner which it attempts to imitate.

Habits and modes of life have changed more during the last half century than at any previous period since the Renaissance, and are still changing with such rapidity that it is impossible to foresee what the result will be when another quarter of a century shall have elapsed. New materials are perpetually coming into use, and each new material brings with it a necessary change in construction, and to some extent in ornamentation, the more so since the creed of honest construction—that is, construction which permits each material to assume its proper external forms—is daily receiving more and more acceptance. Two of these materials, paper, or artificial wood, and glass, are not unlikely to revolutionize the present modes of construction within the course of a few years—the former for the cheaper class of buildings, the latter for more substantial work. New methods of lighting and heating, increasing compactness of kitchen-arrangements, motivated by the scarcity of servants and the corresponding necessity of self-help, the growing importance of apartment-houses and of methods of co-operation generally, and other circumstances of a similar nature, have also their influence upon both the interior arrangement and the exterior Architecture.

Bartholdi Monument.—The grandest monument in the United States, and the most colossal statue in the world, is the great figure of Liberty which rises from a rock in New York harbor. The pedestal is $177\frac{3}{4}$ feet high, while the statue itself—a work of the famous Bartholdi—reaches a height of 152 feet 2 inches. The weight of this immense statue, before which the Colossus of Rhodes sinks into insignificance, is 200,000 kilogrammes, of which the copper *repoussé* work of the statue itself weighs 80,000, and the iron supports 120,000.

But statues must not be included among architectural works, and unfortunately it is seldom the case that their pedestals or other environment have received the attention they deserve, and but few of the numerous monuments erected need be mentioned here. An exception may be made in favor of the base of the Farragut Monument in Madison Square, New York City. The statue of the famous commander stands upon a kind of stone settee, the seat of which is interrupted by a tapering base-stone. The arms of the seat are carved into dolphins veiled by water, and carved billows run across the back of the seat and the base of the statue, against which lean two figures in low relief.

Conclusion.—From the foregoing pages it will be seen that the history of Architecture is almost, if not quite, coeval with that of civilization. The peoples of European blood who inhabit the American continent are the heirs of the Architecture of all preceding ages, but it is only during the last few decades that the study of the styles of former ages has entered into the culture of the people of this country. At the present date such studies are more or less in the mode, and to them we owe various passing fashions, each started in the hope of attracting attention through novelty. But each of these manners, whatever be its name, has more nominal than actual resemblance to the ancient manner which it attempts to imitate.

Habits and modes of life have changed more during the last half century than at any previous period since the Renaissance, and are still changing with such rapidity that it is impossible to foresee what the result will be when another quarter of a century shall have elapsed. New materials are perpetually coming into use, and each new material brings with it a necessary change in construction, and to some extent in ornamentation, the more so since the creed of honest construction—that is, construction which permits each material to assume its proper external forms—is daily receiving more and more acceptance. Two of these materials, paper, or artificial wood, and glass, are not unlikely to revolutionize the present modes of construction within the course of a few years—the former for the cheaper class of buildings, the latter for more substantial work. New methods of lighting and heating, increasing compactness of kitchen-arrangements, motivated by the scarcity of servants and the corresponding necessity of self-help, the growing importance of apartment-houses and of methods of co-operation generally, and other circumstances of a similar nature, have also their influence upon both the interior arrangement and the exterior Architecture.



1. Ludwigskirche at Munich. 2. Interior of the court Church of St. Michael at Munich. 3. Bavarian Hall of buildings of 1855 at Paris. 6. Louvre and Tuileries at Paris.



2

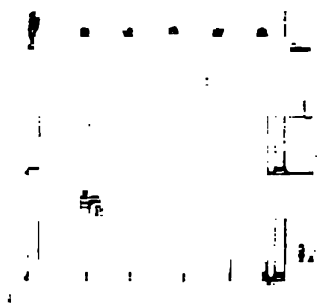


6

and statue of Bavaria (Schwanthaler) at Munich. 4. Court theatre at Dresden (burned in 1869). 5. Exposition

GERMAN.

MODERN



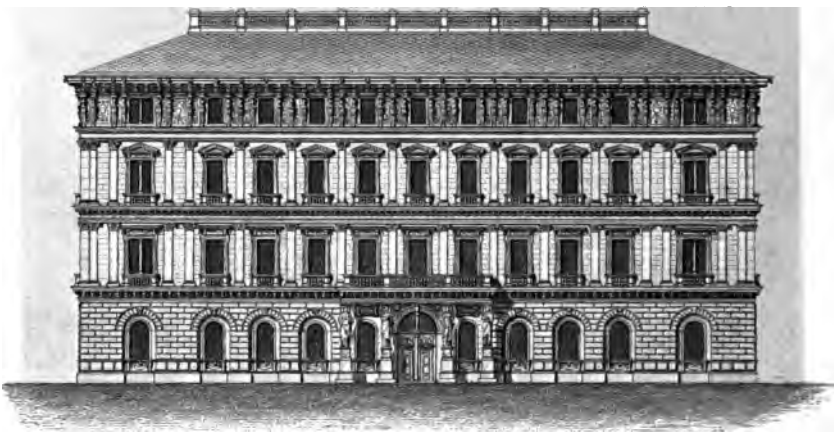
1. Old Pinakothek at Munich. 2. New Pinakothek at Munich. 3. Propylaea at Munich. 4. Museum at Vienna. 5. Palace Epstein at Vienna.



2

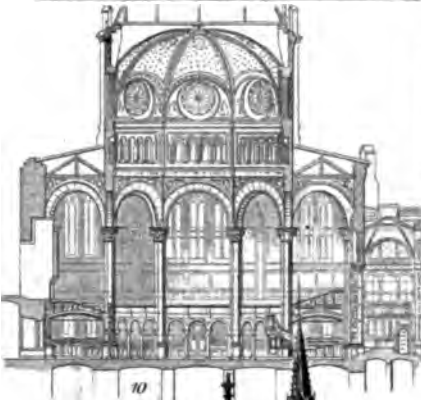


7



9

fiddle pavilion of the museum at Dresden. 6, 7. New theatre at Leipsic. 8. Musical Society's building at



1. Houses of Parliament, London. 2. Fountain of Francis I. on the quay of the Moldau at Prague. 3. To
at Vienna. 6. Fünfhauser Church near Vienna. 7. Votive church at Vienna. 8. Court-theatre at Carlsruhe.
Thomas at Berlin.



na. 4. Commandantur (governor's residence) of the Arsenal at Vienna. 5. Museum of Arms of the Arsenal
e at Baden Baden. 10. Cross-section of the Church of St. Mark at Berlin. 11. Cupola of the Church of St.

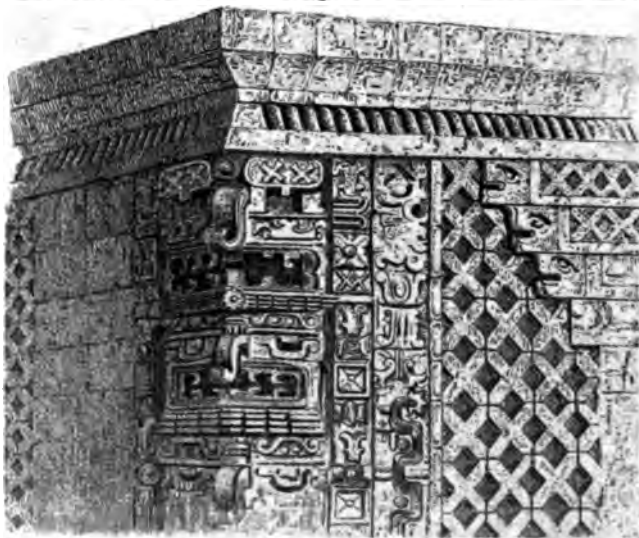


1

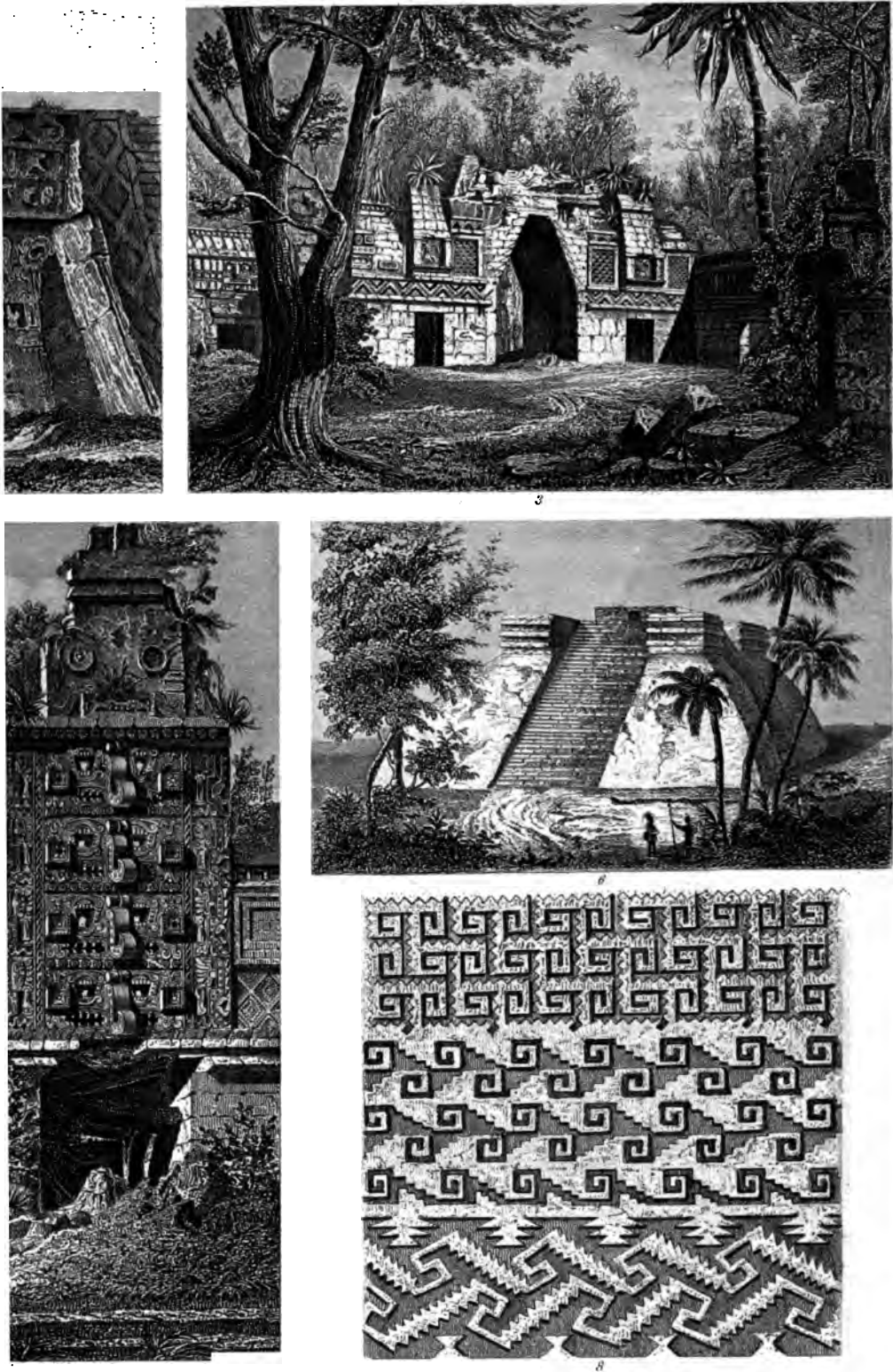


2

1. Académie Nationale de Musique (Garnier), at Paris. 2. Palais de Justice (Poelaert), at Brussels.



1. Teocalli at Papantla, Vera Cruz. 2. Corner of a Teocalli at Xochicalco. 3. Gate at Labnah. 4. Teocal
8. Wall-decoration of a hall in a palace at Mitla.

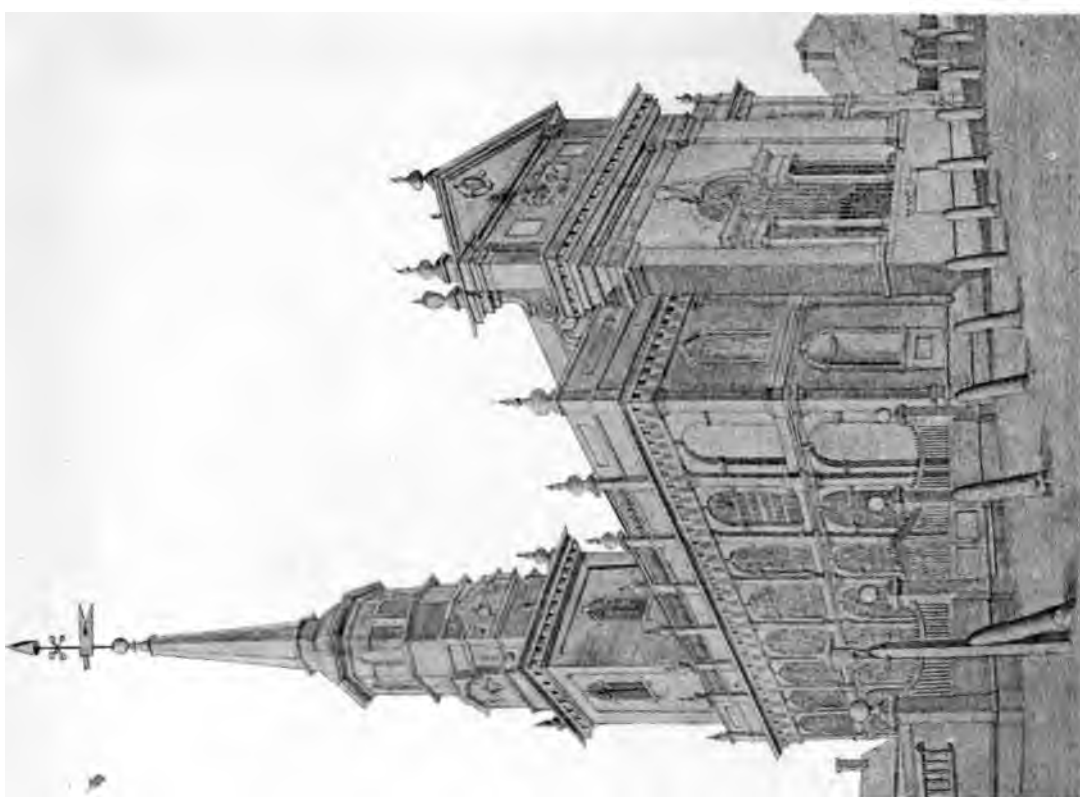


Ruins of a palace at Uxmal. 6. Teocalli at Tehuantepec. 7. Corner of the Palace de las Monjas at Uxmal.

1

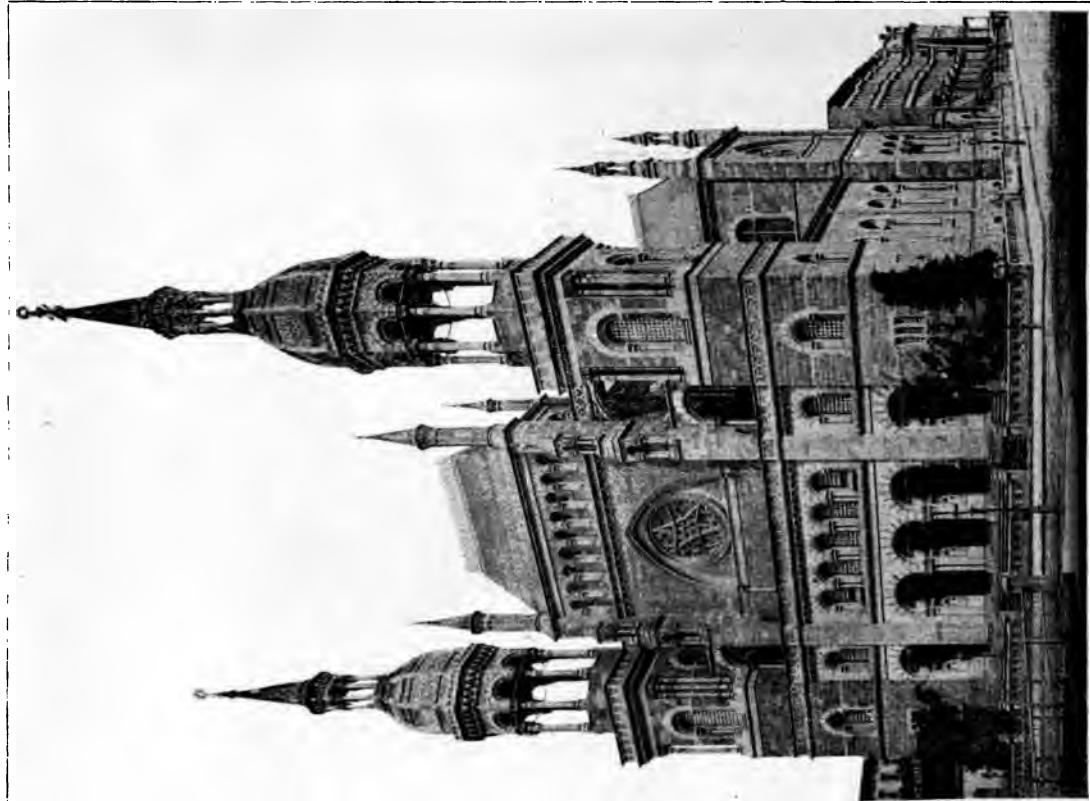


1. Cathedral of St. Louis (De Louilly), at New Orleans, Louisiana.



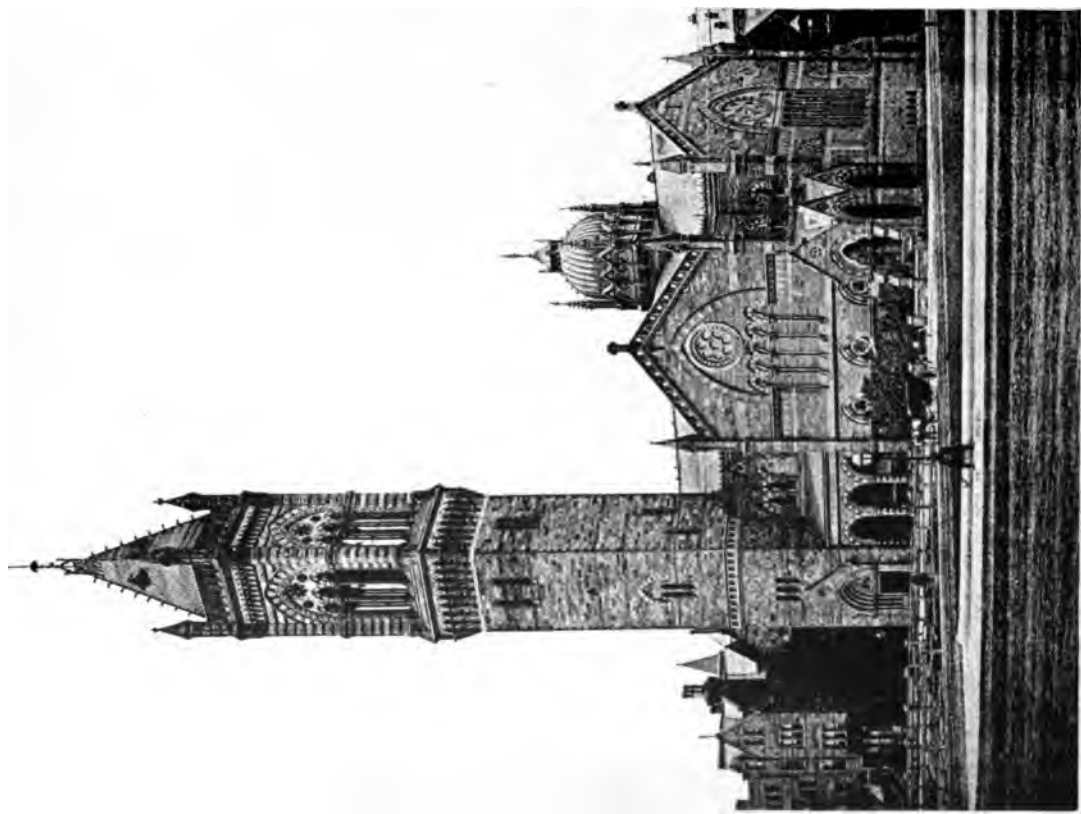
2. Christ Church (Dr. John Kearsley), at Philadelphia.

1



2

2. Temple Emmanuel Synagogue (Leopold Eidlitz), at New York City.



1

1. "New" Old South Church (Cummings and Sears), at Boston.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.



1



2

1. Trinity Church (H. H. Richardson), at Boston. 2. National Capitol, Washington, D. C.

1

1



I



2

1. Parliament Houses (Fuller and Jones), at Ottawa, Canada. 2. State Capitol (F. L. Olmstead, Leopold Eidlitz, and H. H. Richardson), at Albany, New York.



1



2



3

1. State Capitol (Richard Upjohn), at Hartford, Connecticut. 2. Independence Hall (Dr. John Kearsley), at Philadelphia. 3. State-house (Charles Bullfinch), at Boston.

1

2

3

4



2



3



1

1. New City-hall (John McArthur, Jr.), at Philadelphia. 2. Architecture, 3. Art, spandrels of the new City-hall.

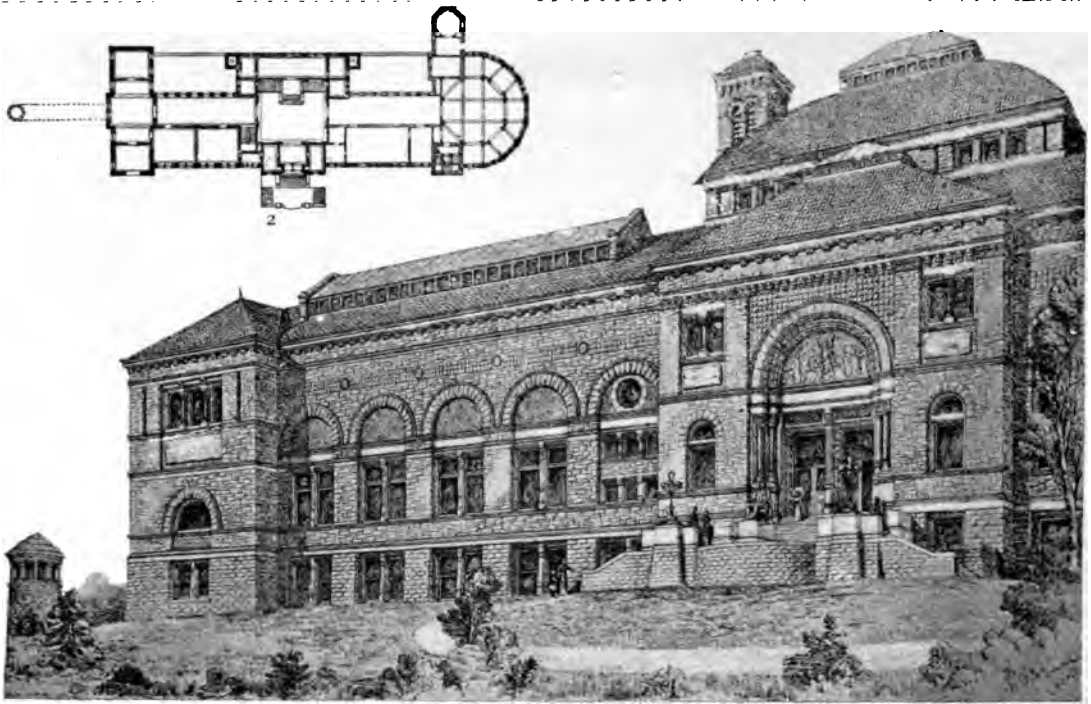


I



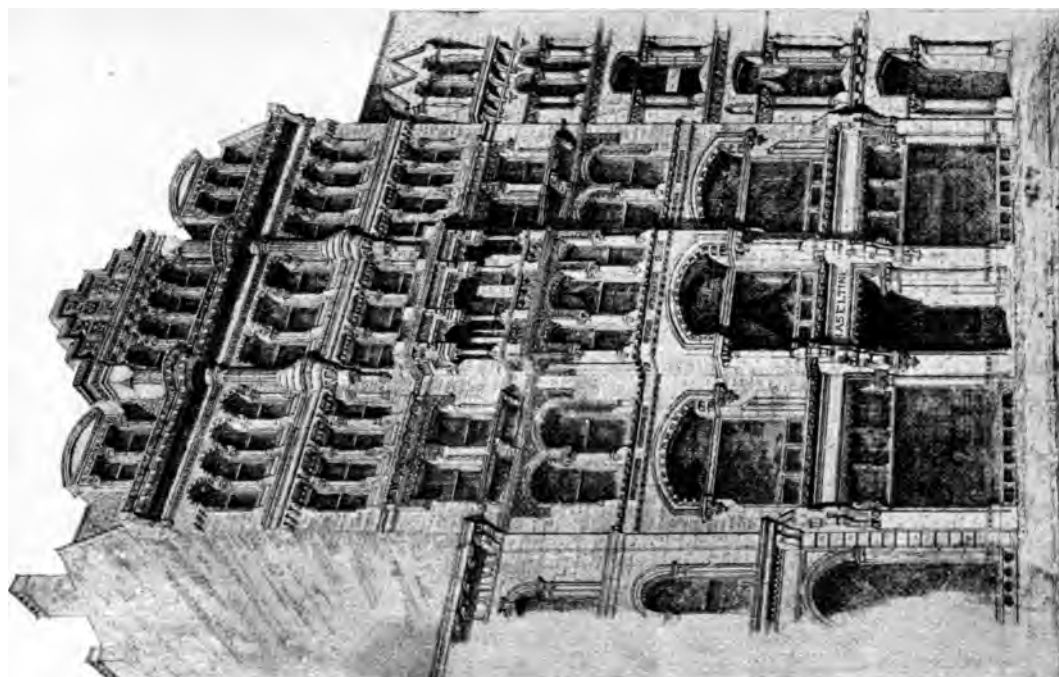
2

1. Casino (Kimball and Wisedell), at New York City. 2. Music and Exposition Hall (J. B. Legg), at St. Louis, Missouri.

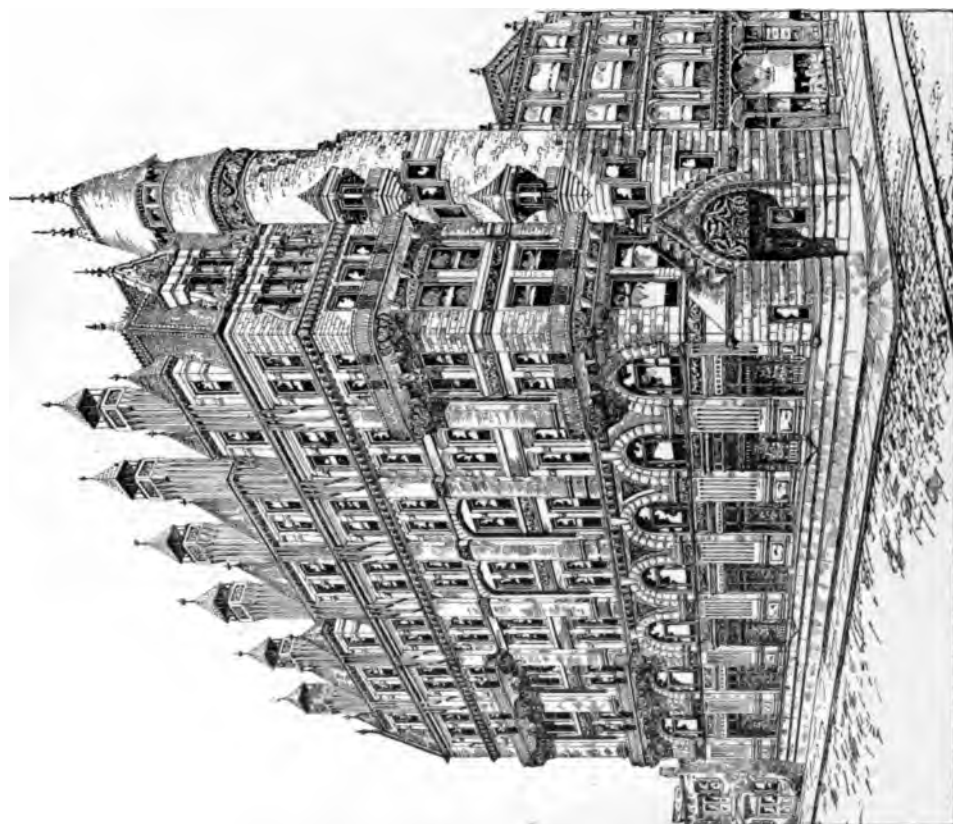




1. Mills Building (G. B. Post), at New York City. 2. Pullman Palace-Car Office Building (S. S. Beman), at Chicago.



2



1

1. Keystone National Bank (Willis G. Hale), at Philadelphia. 2. Haseltine Building (W. N. Lockington), at Philadelphia.



1. Berkshire Apartment-house (Carl Pfeiffer), at New York City.

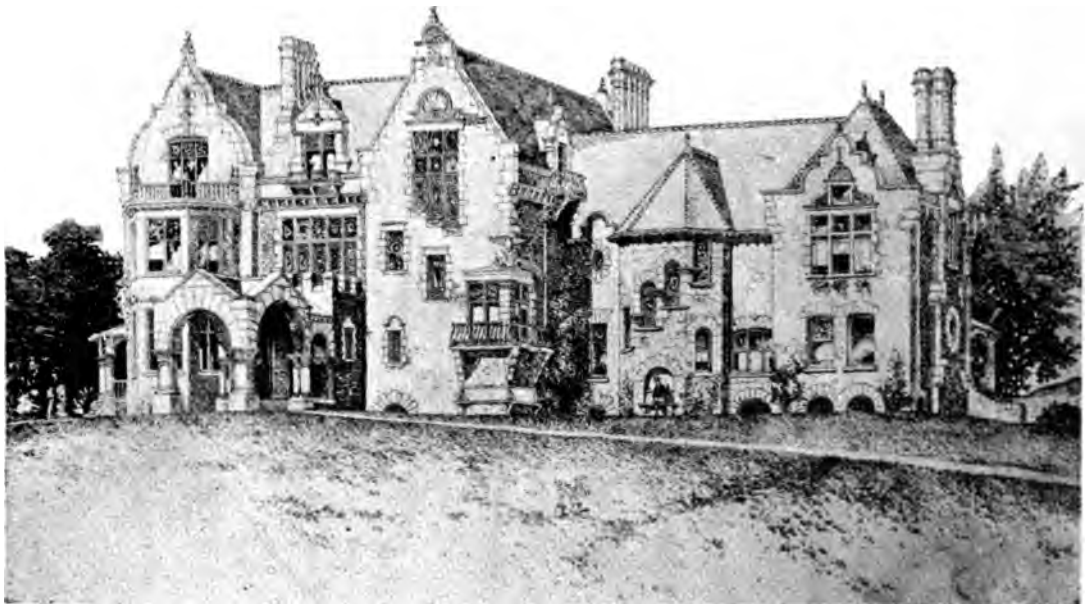


2. House of W. K. Vanderbilt (Richard M. Hunt), at New York City.



1

2



3

1. House of Mrs. Mark Hopkins (now Mrs. A. F. Searle), 2. House of Leland Stanford, at San Francisco, California. 3. "Ingeborg," House of William Simpson, Jr. (Theophilus P. Chandler, Jr.), at Overbrook, Pennsylvania.



1



2

1. Coleman House (McKim, Mead, and White), at Newport, Rhode Island. 2. Seaside House of George A. Baker (Bruce Price), at Monmouth Beach, New Jersey.



1



2

1. Ponce de Leon Hotel, 2. Alcazar (Carrère and Hastings), at St. Augustine, Florida.

GLOSSARY.

- Abacus.**—The upper part of the capital of a column, pier, etc. (See CAPITAL.)
- Abbey.**—A term for the church and other buildings used by conventual bodies presided over by an abbot or an abbess, in contradistinction to *cathedral*, which is presided over by a bishop, and *priory*, the head of which was a prior or a prioress.
- Abutment.**—That part of a wall, pier, or other mass of masonry which serves to support the thrust of an arch or a vault.
- Acropolis.**—The upper town or citadel of a Grecian city, usually the site of the original settlement, and chosen by the colonists for its natural strength.
- Acroterium.**—A statue or ornament of any kind placed on the angles of the gable or apex of a pediment of the building. The term is often restricted to the pedestals which form the bases for the acroteria.
- Ædes in Antis.**—See ANTÆ.
- Agora.**—The place of public assembly. The agora was to the Greeks what the forum was to the Romans.
- Aisle.**—In its primary sense the wing of a house, but generally used to describe the passages at the sides of the nave and choir of a church.
- Altar.**—The elevated table devoted to the celebration of the Eucharist.
- Ambo** (*pl.* Ambones).—The elevated place or pulpit in the early Christian churches.
- Ambulatory.**—The covered passages round a cloister.
- Amphiprostyle.**—A temple with a columned portico at each end, but without lateral columns.
- Amphora** (*pl.* Amphoræ).—An ancient two-handled earthen vessel for holding wine, oil, etc.
- Annulet.**—A term applied to the small fillets or bands which encircle the lower part of the Doric capital immediately above the neck or trachelium.
- Antæ.**—The pier-formed ends of the walls of a building, as in the portico of a Greek temple. A portico is said to be *in antis* when columns stand between antæ, as in the Temple of Nemesis (*pl.* 6, *fig.* 10).
- Antis.**—See ANTÆ.
- Apse.**—The semicircular or polygonal termination to the chancel of a church.
- Aqueduct.**—A conduit or channel for conveying water from one place to another; more particularly applied to structures used for the purpose of conveying water of distant springs across valleys for the supply of cities. The largest and most magnificent aqueducts with which we are acquainted were constructed by the Romans.
- Arcade.**—A range of arches supported either on columns or on piers and detached or attached to the wall.
- Arch.**—A self-sustaining structure of a bow-like form, resting at each end on supports (abutments) to which any strain or force acting against it is communicated by lateral pressure through the wedge-shaped blocks (*voussoirs*). The uppermost stone at the crown of the arch is called the key-stone, and the stones from which the arch springs are the imposts.
- Architectonics.**—Architecture regarded as a science.
- Architrave.**—The chief beam; that part of the entablature which rests immediately on the heads of the columns and is surmounted by the frieze. It is also called the *epistyle* or *epistylum*. The moulded enrichment on the sides and head of a door or window is called an architrave.
- Archivolt.**—The architrave moulding on the face of an arch, and following its contour.
- Ashlar.**—Square rough-hewn stones used for facing walls. (See RUSTICATION.)

- Atrium.**—In ancient Roman architecture, a court, surrounded by porticoes, in the interior part of Roman houses. (See Vol. II. *pl.* 31.)
- Attic.**—A low storey above an entablature or above a cornice which limits the height of the main part of an elevation.
- Balcony.**—A projection from the external wall of a house, borne by columns or consoles, and usually placed before windows or openings and protected on the extremity of the projection by a railing.
- Baldachin.**—See CIBORIUM.
- Band.**—A sort of flat frieze or fascia running horizontally round a tower or other part of a building. It generally has a bold, projecting moulding above and below, and is carved sometimes with foliages, but in general with cusped circles or quatrefoils, in which frequently are shields of arms.
- Band of a Column.**—A series of annulets and hollows going round the middle of the shafts of columns, and sometimes of the entire pier; they are often beautifully carved with foliages, etc.
- Baptistery.**—A separate ecclesiastical building to contain the font for the rite of baptism.
- Baroque.**—In bad taste; florid and incongruous in ornamentation.
- Barrel-vault.**—A semi-cylindrical vault springing from two parallel walls; so called from its resemblance to the interior surface of a barrel cut lengthwise.
- Base.**—That part of a column on which the shaft stands. The only base used by the Egyptians was a mere square plinth. The Assyrian bases shown on the bas-reliefs are strongly moulded, but all actually remaining consist merely of a large torus. The Persian bases were finely moulded, elegant in outline, and more richly ornamented than in any other style. In pure Greek work a base is never used in the Doric, but always in the Ionic and Corinthian. The Romans had bases to all their orders. The Romanesque and Norman bases were evidently copies, for the most part, from classic forms, but were often adorned with leaves at the angles of the square plinths, thereby leading them into the round in a very pleasing way.
- Basilica.**—A term given by the Greeks and Romans to the public buildings devoted to judicial purposes.
- Bath.**—An apartment or series of apartments for bathing. Among the ancients the public baths were of amazing extent and magnificence, and contained a vast number of apartments.
- Battlement.**—A parapet with a series of notches in it from which arrows may be shot or other instruments of defence hurled on besiegers. The raised portions are called *merlons*, and the notches *embrasures* or *crenelles*. The former were intended to cover the soldier while discharging his weapon through the latter. The use of the battlement is of great antiquity; it is found in the sculptures of Nineveh, in the tombs of Egypt, and on the famous François vase, where there is a delineation of the siege of Troy.
- Bay.**—Any division or compartment of an arcade, roof, etc. Thus, each space from pillar to pillar in a cathedral is called a bay.
- Bay-window.**—Any window projecting outward from the wall of a building, either square or polygonal on plan, and commencing from the ground. If carried on projecting corbels, it is called an oriel-window.
- Bazaar.**—A species of mart or exchange for the sale of divers articles of merchandise.
- Belfry** (Fr. *clocher* if applied to a church, *beffroi* if to the tower of a *hôtel de ville*; Ital. *campanile*; Ger. *Glockenthurm*).—Properly speaking, a detached tower or campanile containing bells, but generally applied to the ringing-room or loft of the tower of a church.
- Blocking-course.**—A deep but slightly-projecting course in an elevation, to act as cornice to an arcade or to separate a basement from a superior storey. (See STRING-COURSE.)
- Boss.**—An ornament, generally carved, forming the keystone at the intersection of the ribs of a groined vault. Early Norman vaults have no bosses; the carving is generally foliage, and resembles that of the period in capitals, etc. Sometimes they

have human heads, as at Notre Dame at Paris, and sometimes grotesque figures. In later vaulting there are bosses at every intersection.

Bracket.—A projecting ornament carrying a cornice. Those which support vaulting-shafts or cross-springers of a roof are generally called *corbels*.

Buttress.—Masonry projecting from a wall and intended to strengthen the same against the thrust of a roof or a vault. Buttresses are no doubt derived from the classic pilasters which serve to strengthen walls where there is a pressure of a girder or roof-timber. (See FLYING-BUTTRESS.)

Campanile.—A name given in Italy to the bell-tower of a town-hall or a church. In that country this is almost always detached from the latter. (See *pl.* 38; BELFRY.)

Canopy.—The upper part or cover of a niche, or the projecting ornament over an altar or seat or tomb.

Capital.—The upper part of a column, pilaster, pier, etc. Capitals have been used in every style down to the present time. That mostly used by the Egyptians was bell-shaped, with or without ornaments. The Persians used the double-headed bell, forming a kind of bracket capital. The Assyrians apparently made use of the Ionic and Corinthian, which were developed by the Greeks, Romans, and Italians into their present well-known forms. The Doric was apparently an invention or adaptation by the Greeks, and was altered by the Romans and Italians. But in all these examples, both ancient and modern, the capitals of an order are all of the same form throughout the same building, so that if one be seen the form of all the others is known. The Romanesque architects altered all this, and in the carving of their capitals often introduced such figures and emblems as helped to tell the story of their building. Another form was introduced by them in the curtain capital, rude at first, but afterward highly decorated. It evidently took its origin from the cutting off of the lower angles of a square block, and then rounding them off. The process may be distinctly seen, in its several stages, in Mayence Cathedral. But this form of capital was more fully devel-

oped by the Normans, with whom it became a marked feature. In the Early English capitals a peculiar flower of three or more lobes was used, spreading from the necking upward in most graceful forms. In Decorated and Perpendicular this was abandoned in favor of more realistic forms of crumpled leaves, enclosing the bell like a wreath. In each style bold abacus mouldings were always used, whether with or without foliage.

Caryatides.—Human female figures used as piers, columns, or supports. *Caryatic* is applied to the human figure generally when used in the manner of Caryatides (*pl.* 8).

Castle.—A building fortified for military defence; also a house with towers, usually encompassed with walls and moats and having a donjon or keep in the centre.

Cathedral.—(Ital. *duomo, cattedrale*; Fr. *cathédrale*; Ger. *Domkirche*). The principal church, where the bishop has his seat (*cathedra*) as diocesan.

Cavetto.—A moulding whose form is a simple concave, impending.

Ceiling.—That covering of a room which hides the joists of the floor above or the rafters of the roof. Most churches either have open roofs or are groined in stone.

Cella.—In ancient architecture, the part of a temple within the walls. It was also called the *naos*, whence our nave in a church. The part of a temple in front of the cella was the *pronaos*, and that in the rear the *posticum* (*pl.* 6).

Cells.—Small monastic houses, generally in the country, belonging to large conventual buildings, and intended for change of air for the monks, as well as places to reside in to look after the lands, vassals, etc. Also the small sleeping-apartments of the monks; also small apartments used by the anchorites or hermits.

Chamfer.—When the edge or arris of any work is cut off at an angle of forty-five degrees to a small extent, it is said to be chamfered; if to a large extent, it is said to be a canted corner. The chamfer is much used in mediæval work, and is sometimes plain, sometimes hollowed out, and sometimes moulded.

Chancel.—A place separated from the rest

of a church by a screen. The word is now generally used to signify the choir of a small church.

Chapel.—A small detached building used as a substitute for a church in a large parish; an apartment in any large building, palace, nobleman's house, hospital, or prison, used for worship; or an attached building running out of and forming part of a large church, generally dedicated to different saints, each having its own altar, etc., and screened off from the body of the building.

Chapter-house.—The chamber in which the chapter or heads of the monastic bodies assembled to transact business.

Chevron.—A zigzag ornament peculiar to the Romanesque style.

Chevet.—See **CHOIR**.

Choir.—The extension of the nave east of the transept; that part of a church or monastery where the breviary services are chanted.

Choragic.—A monument erected in honor of the choragos who gained the prize by the exhibition of the best musical or theatrical entertainment at the festivals of Bacchus. The choragi were the heads of the ten tribes at Athens who overlooked and arranged the games at their own expense. The prize was usually a tripod, which the victor was bound to exhibit publicly, for which purpose a building or column was erected.

Ciborium.—A tabernacle or vaulted canopy supported on shafts standing over the high altar.

Cinquecento.—Literally, 500, an abbreviation of 1500. Used to designate the style of architecture of the Early Renaissance, which arose in Italy early in the sixteenth century.

Cinquefoil.—A sinking or perforation like a flower of five points or leaves, as a quatrefoil is of four. The points are sometimes in a circle, and sometimes form the cusping of a head.

Citadel.—A fortress or castle in or near a city. (See **ACROPOLIS**.)

Clepsydra.—A water-clock, or vessel for measuring time by the gradual dropping of water. Clepsydras were first used in Egypt under the Ptolemies; they seem to have

been common in Rome, though they were chiefly employed in winter. In summer sundials were used.

Clerc-storey.—That portion of the middle aisle of a church which rises above the side-aisles and is pierced with windows.

Cloister.—An enclosed square, like the atrium of a Roman house, with a walk or ambulatory round, sheltered by a roof, generally groined, and by tracery windows, which were more or less glazed.

Clustered Column.—Several slender pillars or columns attached to one another so as to form one. (See *pl.* 30, *fig.* 4.)

Coffer.—A deep panel in a ceiling.

Coliseum.—The name given to the amphitheatre built by Vespasian at Rome.

Colonnade.—A range of columns. If the columns are four in number, it is called tetrastyle; if six in number, hexastyle; when eight, octostyle; and so on according to the Greek numerals. When a colonnade is in front of a building it is called a portico; when it surrounds a building, a peristyle.

Column.—A tapering cylindrical mass placed vertically on a level stylobate, in some cases with a spreading congeries of mouldings called a *base*, and having always at its upper and smaller end a dilating mass called a *capital*. Columns are either insulated or attached. They are said to be attached or engaged when they form part of a wall, projecting one half or more, but not the whole, of their substance. (For the columns of different styles and orders of architecture, see the separate heads.)

Compluvium.—An area in the centre of the ancient Roman houses, so constructed that it might receive the waters from the roofs. (See *Vol. II. pl.* 31.)

Composite Order.—The last of the "FIVE ORDERS" (*q. v.*) of Rome, composed of the Ionic grafted upon the Corinthian order. The examples at Rome are the Arch of Septimius Severus (*pl.* 10, *fig.* 3), the Arch of Titus, the Temple of Bacchus, and the baths of Diocletian.

Console.—A bracket or truss, generally with scrolls or volutes at the two ends, of unequal size and contrasted, but connected by a flowing line from the back of the up-

- per one to the inner convolving face of the lower (*pl.* 40, *fig.* 10).
- Convent.**—A building for the reception of a society of religious persons.
- Coping.**—The capping or covering of a wall. This is of stone, weathered to throw off the wet.
- Corbel.**—The name in mediæval architecture for a piece of stone jutting out of a wall to carry any superincumbent weight. A piece of timber projecting in the same way was called a *tassel* or a *bragger*. Norman corbels are generally plain. In the Early English period they are more or less elaborately carved. They sometimes end with a point apparently growing into the wall or forming a knot, and often are supported by angels and other figures. In the later periods the foliage or ornaments resemble those in the capitals. (See *CAP-ITAL*.)
- Corinthian Order.**—This order originated in Greece, and the capital is said to have been suggested by observing a tile placed on a basket left in a garden, and an acanthus growing round it. The principal distinction of this order is its capital, richly ornamented with leaves and flowers. (See *pl.* 8.)
- Cornice.**—The projection at the top of a wall finished by a blocking-course; common in classic architecture.
- Credence.**—A slab whereon, in the sacrifice of the mass, the elements are deposited previous to the oblation. Sometimes a plain recess, sometimes a slab or a bracket, it is in all cases placed on the south side of the altar.
- Crocket.**—An ornament running up the sides of gablets, hood-moulds, pinnacles, spires; generally a winding stem like a creeping plant, with flowers or leaves projecting at intervals, and terminating in a finial.
- Cross.**—This religious symbol is almost always placed on the ends of gables, the summits of spires, and other conspicuous places of old churches. In early times it was generally very plain, often a simple cross in a circle. Sometimes it takes the form of a light cross, crosslet, or a cross in a square. In the Decorated and later styles it became richly floriated and assumed an endless variety of forms. (See *pl.* 30, *figs.* 9–12.)
- Cross-vault.**—That formed by the intersection of two or more simple vaults. When each rises from the same level to equal heights, the cross-vault is denominated a *GROIN* (*q. v.*); but when one is below the other, the intersection is called an arch. (See *pl.* 26, *figs.* 2, 3.)
- Cruciform.**—Having the form of a cross.
- Crypt.**—A subterranean vaulted apartment of greater or less size, usually under the choir of a church.
- Cupola.**—A spherical or spheroidal covering to a building, or to any part of it.
- Curb-roof.**—A roof with angular projections running lengthwise on the sides, and formed by the meeting of two sets of rafters, which are inclined to each other. It is frequently termed *gambrel-roof*, also called *mansard roof*. (See *pl.* 68, *fig.* 1.)
- Cusp.**—The point where the foliations of tracery intersect.
- Cyclostyle.**—A structure composed of a circular range of columns without a core; with a core the range would be a peristyle.
- Cyma.**—The name of a moulding of very frequent use. It is a simple, waved line, concave at one end and convex at the other, like an Italic *f*. When the concave part is uppermost it is called a *cyma recta*; but if the convexity appear above and the concavity below, it is then a *cyma reversa*.
- Decastyle.**—A portico of ten columns in front.
- Dentils.**—Small rectangular blocks common in the bed-mould of a Corinthian entablature, originally representing the ends of the slabs which formed the ceiling.
- Design.**—The plans, elevations, sections, and whatever other drawings may be necessary for an edifice, exhibit the design, the term *plan* having a restricted application to a technical portion of the design. (See *PLAN*.)
- Detail.**—As used by architects, detail means the smaller parts into which a composition may be divided. It is applied generally to mouldings and other enrichments, and again to their minutiae.
- Dhagoba.**—A mound crowned by a dome-

shaped structure containing relics of Buddha; a TOPE (*q. v.*) used as a Buddhist relic-shrine.

Diagonal Rib.—A rib crossing the compartment of a vault from opposite angles. (See *pl.* 26, *figs.* 2, 3; *RIB.*)

Diameters.—The diameters of the lower and upper ends of the shaft of a column are called its inferior and superior diameters respectively; the former is the greatest, the latter the least, diameter of the shaft.

Diaper.—A method of decorating a wall, panel, stained glass, or any plain surface, by covering it with a continuous design of flowers, rosettes, etc., either in squares or lozenges, or some geometrical form resembling the pattern of a diapered tablecloth, from which, in fact (*drap d'Ypres*), the name is supposed by some to have been derived.

Dipteros.—A double-winged temple. The Greeks are said to have constructed temples with two ranges of columns all round, which were called dipteroi. A portico projecting two columns and their interspaces is of dipteral or pseudo-dipteral arrangement (*q. v.*).

Discharging-arch.—An arch over the opening of a door or window to discharge or relieve the superincumbent weight from pressing on the freestone.

Distyle.—A portico of two columns. This term is not generally applied to the mere porch with two columns, but is used to describe a portico with two columns *in antis*.

Dodecastyle.—A portico of twelve columns in front.

Dome.—A cupola or inverted cup on a building. The application of this term to its generally-received purpose is from the Italian custom of calling an archiepiscopal church, by way of eminence, *Il duomo*, the temple; for to one of that rank, the Cathedral of Florence, the cupola was first applied in modern practice. The Italians themselves never call a cupola a dome: it would appear that they use the term with reference to those structures whose most distinguishing feature is the cupola, tholos, or (as we now call it) dome. (See *CUPOLA*.)

Doric Order.—The oldest of the three or-

ders used by the Greeks. It is distinguished for its simplicity and strength; the column has no base, but stands immediately on the pavement or floor of the building (*pls.* 6, 7). The Roman Doric is the second of the FIVE ORDERS (*q. v.*), and differs from Grecian Doric chiefly in having a base to the column.

Dormer-window.—A window belonging to a room in a roof, which consequently projects from it with a valley gutter on each side. Dormer-windows are said not to be earlier than the fourteenth century. In Germany there are often several rows of dormers, one above the other. (See *pl.* 46.) In Italian Gothic they are very rare; in fact, the former have an unusually steep roof, while in the latter country, where the Italian tile is used, the roofs are rather flat.

Dormitory.—That part of a monastery where the monks slept at night. It was sometimes one long room like a barrack, and sometimes divided into a succession of small chambers or cells. The dormitory was generally on the first floor and connected with the church, so that it was not necessary to go out of doors to attend the nocturnal services. The term is now commonly applied a large sleeping-apartment capable of containing many beds.

Drum.—The vertical walls, of circular plan, which support a cupola or dome.

Duomo.—See *DOVE*.

Echinos.—The curved and projecting moulding which supports the abacus in the Doric capital.

Echinus.—A moulding of eccentric curve, generally cut (when it is carved) into the forms of eggs and anchors alternating, whence the moulding is called by the name of the more conspicuous element.

Egg-moulding.—See *ECHINUS*.

Elevation.—The front *façade*, as the French term it, of a structure; a geometrical drawing of the external upright parts of a building.

Engaged Column.—A term applied to a shaft, in plan an arc less than a full circle, which is attached to the surface of a wall or a pier. (See *COLUMN*.)

Ensemble.—A term denoting the masses and details considered in relation to one

another. The general appearance or effect of a building.

Entablature.—The superimposed horizontal mass in a columnar ordinance which rests upon the tablet or abacus of a column. It is conventionally composed of three parts, *Architrave*, *Frieze*, and *Cornice*.

Epistyle, or Epistylum.—This term may with propriety be applied to the whole entablature, with which it is synonymous, but it is restricted in use to the architrave or lowest member of the entablature.

Escutcheon.—A term for the shields used on tombs, in the spandrels of doors, or in string-courses. Also the ornamented plates from the centre of which door-rings, knockers, etc., are suspended, or which protect the wood of the keyhole from the wear of the key. In mediæval times these were often worked in a very beautiful manner (*pl. 40, fig. 11*).

Extrados.—The exterior or back of an ARCH (*q. v.*); the top of the voussoirs, as opposed to the inner surface, which is called the SOFFIT or INTRADOS (*q. v.*).

Façade.—See ELEVATION.

Facettes.—Flat projections between the flutes of columns.

Fan-vaulting.—A kind of vaulting in which a number of ribs rising from one impost point have the same curve and diverge equally in every direction, like the sticks of a fan.

Fenestration.—The form and arrangement of windows in a building.

Fillet.—A narrow vertical band of frequent use in congeries of mouldings to separate and combine them, and also to give breadth and firmness to the upper edge of a crowning cyma or cavetto, as in an external cornice. The narrow slips or breadths between the flutes of Corinthian and Ionic columns are also called fillets.

Finial.—The flower or bunch of flowers with which a spire, pinnacle, gablet, canopy, etc., generally terminates. Where there are crockets, the finial generally bears as close a resemblance as possible to them in point of design. Finials are found in early work where there are no crockets. The simplest form more resembles a bud about to burst than an open flower.

Five Orders.—The adoption of the Vitruvian laws by the Italian architects of the fifteenth century (*Cinquecentists*) led to the formation of the so-called "Five Orders." In treating the course of Greek and Roman architecture mention is made of the Doric, Ionic, and Corinthian styles. Vitruvius describes, in addition to these, another, which he calls Tuscan; but in the absence of delineations the *Cinquecentists* could only apply the proportions he laid down for it to what appeared to approximate them in the ancient remains, and hence arose the fourth or "Tuscan order." It is, however, a mere modification of the Roman debasement of the Doric. The same "revivers," on looking among the ruins of ancient Rome for the forms of their Vitruvian orders, found specimens of a foliated ordinance which the bad taste of the Romans had compounded of the foliated and voluted styles of the Greeks. This was seized upon as a fifth style, subjected to certain rules and proportions, and called the "Composite order." Thus arose the "Five Orders" of the Italo-Vitruvian school: *first*, the Tuscan, of which there is no recognized example of antiquity; *second*, the Doric, a poor and tasteless arrangement of the general features of the style on a Roman model; *third*, the Ionic, which is almost as great a debasement of the Grecian originals; *fourth*, the Corinthian, totally unlike the ancient examples of both Greece and Rome; and *fifth*, the Composite, an inelegant variety of the Corinthian.

Flamboyant.—A name applied to the Third Pointed style in France, which seems to have been developed from the Second. The great characteristic is that the element of the tracery flows upward in long wavy divisions like flames of fire. In most cases, also, every division has only one cusp on each side, however long the division may be.

Flèche.—A general term in French architecture for a spire, but more particularly used for the small slender erection rising from the intersection of the nave and transepts in cathedrals and large churches, and carrying the sanctus bell.

Flute.—A concave channel. Columns

whose shafts are channelled are said to be fluted, and the flutes are collectively called flutings.

Flying-buttress.—A buttress in the form of an arch, or portion of an arch, springing from a solid mass of masonry, passing over the roof of the side-aisles, and abutting against the springing of another arch, which rises from the upper point of the abutment of the first. Its office is to act as a counterpoise against the vaulting of the nave. (See *pl. 29, figs. 2, 8-10.*)

Fore-court.—See **ATRIUM**.

Forum.—In ancient architecture, a public market; also a place where the common courts were held and law-pleadings carried on. The *fora* of the Romans were large open squares surrounded by porticoes, parts of which answered for market-places, public meetings of the citizens, and courts of justice, and were also occasionally used for exhibitions of gladiators.

Fresco.—The method of painting on a wall while the plastering is wet. The color penetrates through the material, which therefore will bear rubbing or cleaning to almost any extent. The transparency, the chiaroscuro and lucidity, as well as force, which can be obtained by this method cannot be conceived unless the frescos of Fra Angelico or Raphael are studied. The word, however, is often applied improperly to mediæval delineations in ancient churches which are only painted on the surface in distemper or body-color mixed with size or the white of an egg, which gives them an opaque effect.

Frieze.—That portion of an entablature between the cornice above and the architrave below. It derives its name from being the recipient of the sculptured enrichments, either of foliage or of figures, which may be relevant to the object of the sculpture.

Frigidarium.—In ancient architecture, the apartment in which the cold bath was placed. The word is also used to denote the cold bath itself.

Gable.—When a roof is not hipped or returned on itself at the ends, its ends are stopped by carrying up the walls under them in the triangular form

itself. This is called the gable, or, in the case of an ornamented gable, the pediment.

Gable-window.—A term sometimes applied to the large window under a gable, but more properly to the windows in the gable itself.

Gallery.—Any long passage looking down into another part of a building or into the court outside. In like manner, any stage erected to carry a rood or an organ or to receive spectators was latterly called a gallery, though originally a loft. In later times the name was given to any very long rooms, particularly those intended for purposes of state.

Gambrel-roof.—See **CURB-ROOF**.

Gargoyle.—The carved termination to a spout which conveyed away the water from the gutters; supposed to be so called from the gurgling noise made by the water passing through it. Gargoyles are mostly grotesque figures.

Gate-house.—A building forming the entrance to a town, the door of an abbey, or the enceinte of a castle or other important edifice. Gate-houses generally had a large gateway protected by a gate, and also a portcullis, over which were battlemented parapets with holes (machicolations) for throwing down darts, melted lead, or hot sand on the besiegers. Gate-houses always had a lodge, with apartments for the porter and guard-rooms for the soldiers, and generally rooms over for the officers, and often places for prisoners beneath (*pl. 34*).

Grille.—The ironwork forming the enclosure screen to a chapel or the projecting railing to a tomb or shrine. Grilles are of wrought iron, ornamented by the swage and punch, and put together either by rivets or by clips.

Groin.—By some described as the line of intersection of two vaults where they cross each other, which others call the *groin-point*; by others, the curved section or spandrel of such vaulting is called a groin, and by others the whole system of vaulting is so named.

Groin-arch.—The cross-rib in the later styles of groining, passing at right angles from wall to wall, and dividing the vault into bays.

Groin-ceiling.—A ceiling to a building composed of oak ribs, the spandrels of which are filled in with narrow, thin slips of wood.

Groin-rib.—The rib which conceals the groin-point or joints where the spandrels intersect.

Groined Vaulting.—The system of covering a building with stone vaults which cross and intersect one another, as opposed to the barrel-vaulting, or series of arches placed side by side.

Grotto.—A natural cave or covered passage formed in the earth; a cavern.

Guttæ.—The small cylindrical drops used to enrich the mutules and regulæ of the Doric entablature.

Gutter.—The channel for carrying off rain-water. The mediæval gutters differ little from others, except that they are often hollows sunk in the top of stone cornices.

Half-column.—See ENGAGED COLUMN.

Hall.—The principal apartment in the large dwellings of the Middle Ages; used for the purposes of receptions, feasts, etc. In the Norman castle the hall was generally in the keep, above the ground-floor, where the retainers lived, the basement being devoted to stores and dungeons for confining prisoners. Later halls—indeed, some Norman halls (not in castles)—are generally on the ground-floor, approached by a porch, either at the end or at the side, having at one end a raised dais or estrade. The roofs are generally open and more or less ornamented. In the middle of these was an opening to let out the smoke, though in later times the halls have large chimney-places with funnels or chimney-shafts for this purpose. At this period there were usually two deeply-recessed bay-windows at each end of the dais, and doors leading into the withdrawing-rooms or the ladies' apartments; they are also generally wainscoted with oak in small panels to the height of five or six feet, the panels often being enriched.

Hallenkirche.—A basilica with three aisles of equal height.

Hellenic.—Relating to the Hellenes or Greeks; anything Grecian.

Heroic Age.—That age or period of the

world in which the heroes and demigods of antiquity are supposed to have flourished.

Hexapartite.—A system of vaulting in which each bay is divided into six compartments; it was invented to cover the naves of churches of unusual width. The filling of the spandrels in this style is peculiar; and where the different compartments meet at the ridge, some pieces of harder stone have been used, which give a rather pleasing effect. The arches against the wall, being of smaller span than the main arches, cause the centre springers to be perpendicular and parallel for some height, and the spandrels themselves are very hollow.

Hexastyle.—A portico of six columns in front.

High Altar.—The principal altar in a cathedral or a church. Where there is a second it is generally at the end of the choir or chancel, not in the Lady-chapel.

Hipped Roof.—A roof whose return at the end of a building rises immediately from the wall-plate with the same inclination, or pitch, as the adjacent sides.

Hippodrome.—In ancient architecture, a place appropriated by the Greeks to equestrian exercises, and one in which the prizes were contended for.

Hood-mould.—A word used to signify the dripstone or label over a window- or door-opening, whether inside or out; but it seems more properly to be applied to the mouldings at the arris of the arch at the inner side of such opening. Sometimes these assume the form of a label and have jamb-shafts. Frequently the soffit is slightly hollowed and finishes with an arris.

Hôtel de Ville.—The town-hall or guild-hall in France, Germany, and Northern Italy. The building in general serves for the administration of justice, the receipt of town-dues, the regulation of markets, the residence of magistrates, barracks for police, prisons, and all other fiscal purposes. As may be imagined, the hôtels differ very much in different towns, but they have almost invariably attached to them, or closely adjacent, a large clock-tower (*beffroi*) containing one or more bells for calling the people together on special occasions.

- Hypæthros.**—A temple open to the air, or uncovered. The term may be more easily understood by supposing the roof removed from over the nave of a church in which columns or piers go up from the floor to the ceiling, leaving the aisles still covered.
- Hypostyle.**—A space with or without lateral enclosure, the ceiling of which rests upon columns.
- Impluvium.**—In ancient architecture, the outer part of the court of a house which was exposed to the weather. In summer-time it was the practice to stretch an awning over it.
- Impost.**—See ABUTMENT, also ARCH.
- Intercolumniation.**—The distance from column to column; the clear space between columns.
- Jamb.**—The side-post or lining of a doorway or other aperture.
- Keep.**—The inmost and strongest part of a mediæval castle, answering to the citadel of modern times. The keep was intended for the last refuge in case the outworks were scaled and the other buildings stormed.
- Keystone.**—The centre voussoir of an arch, often ornamented with carving (*pl.* 31, *figs.* 7, 8). In Pointed architecture there is often no keystone. (See ARCH.)
- Knob, Knot.**—The bunch of flowers carved on a corbel or on a boss.
- Labyrinth.**—Literally, a place, usually subterranean, full of inextricable windings.
- Lancet Arch.**—An arch whose head is shaped like the point of a lancet; generally applied to long, narrow windows.
- Lantern.**—A turret raised above a roof or tower and very much pierced, the better to transmit light. In modern practice this term is generally applied to any raised part in a roof or ceiling containing vertical windows, but covered in horizontally.
- Lectern.**—A reading-desk or stand upon which are placed the large books read in the service of the church.
- Lintel.**—A horizontal piece of timber or stone over a door, window, or other opening.
- Loggia.**—A covered space in a building, one or more of the sides of which are open to the air by colonnades or arcades.
- Machicolation.**—An opening between a wall and a parapet, formed by corbelling over the latter, so that the defenders of the building might throw down darts, stones, and sometimes hot sand, melted lead, etc., upon their assailants below.
- Mausoleum.**—A term used to denote a sepulchral building. Originally applied to the tomb of Mausolus, king of Caria, the name was afterward given to tombs of an imposing size and magnificence.
- Medallion.**—A square—or, more properly, a circular—tablet on which are embossed figures, busts, and the like.
- Metope.**—The square recess between the triglyphs in a Doric frieze. It is sometimes occupied by sculptures. Originally the orifice between the beam-ends of the Doric ceiling.
- Metropolis.**—The chief city or capital of a kingdom or a state. Originally the *mother-city*, in relation to colonies.
- Metropolitan.**—The bishop of the mother-church—that is, the church from which others have branched off, and over which the bishop or archbishop has authority.
- Mezzanine.**—A low storey between two lofty ones. It is called by the French *entresol*, or inter-storey.
- Minaret.**—A slender lofty turret rising by different stages or storeys surrounded by one or more projecting balconies. The latter are used in Mohammedan countries by the priests for summoning the people to prayers at stated periods of the day.
- Minster.**—The large church attached to any ecclesiastical fraternity. If the latter be presided over by a bishop, it is generally called a *cathedral*; if by an abbot, an *abbey*; if by a prior, a *priory*.
- Modillion** (so called because of its arrangement in regulated distances).—The enriched block or horizontal bracket generally found under the cornice of the Corinthian entablature. Less ornamental, it is sometimes used in the Ionic. (See also MUTULE.)
- Monastery.**—A set of buildings adapted for the reception of any of the various orders of monks.
- Monoclinic.**—A crystal of a single block

Monument.—A name given to a tomb, particularly to those fine structures recessed in the walls of mediæval churches.

Mosaic.—Pictorial representations or ornaments formed of small pieces of stone, marble, or enamel of various colors. In Roman houses the floors are often entirely of mosaic, the pieces being cubical.

Mosque.—A Mohammedan temple or place of worship. The Arabic term is *Masjid*.

Motive (French *motif*).—A term expressive of the ideal conception in the mind of the architect to which he endeavors to conform his production. Motive is independent of execution.

Moulding.—When any work is wrought into long regular channels or projections, forming curves or rounds, hollows, etc., it is said to be *moulded*, and each separate member is called a *moulding*. In mediæval architecture the principal mouldings are those of the arches, doors, windows, piers, etc.

Mullion.—The perpendicular pieces of stone, sometimes like columns, sometimes like slender piers, which divide the bays or lights of windows or screen-work from each other. Mullions were introduced about the twelfth century.

Mutule.—The rectangular impending block under the corona of the Doric cornice from which depend guttæ or drops. The mutules originally marked the position of the rafter-ends. "Mutule" is equivalent to "modillion," but the latter term is applied more particularly to enriched blocks or brackets, such as those of Ionic and Corinthian entablatures.

Naos.—This term is sometimes used instead of the Latin *cella*, as applied to the temple-interior; strictly, however, it means the body of the edifice itself, and not merely its interior or cell.

Narthex.—The long arcaded porch forming the entrance into the Christian basilica. Sometimes there was an inner narthex or lobby before entering the church; when this was the case, the former was called *exo-narthex*, and the latter *eso-narthex*. In the Byzantine churches this inner narthex forms part of the solid structure of the church, being marked off by a wall or row

of columns, whereas in the Latin churches it was usually formed only by a wooden or other temporary screen.

Naumachia.—In ancient architecture, a place for the exhibition of mock sea-engagements; little different from the circus and the amphitheatre, since this species of displays was often exhibited in those buildings.

Nave.—The central part between the arches of a church, which formerly was separated from a chancel or choir by a screen. It is so called from its fancied resemblance to the inverted hull of a ship. In the nave were generally placed the pulpit and the font. The term *nave* is used interchangeably for the central aisle and the longer extension of a cruciform church.

Necking.—The annulet or round, or series of horizontal mouldings, which separates the capital of a column from the plain part of a shaft.

Niche.—A recess sunk in a wall, generally for the reception of a statue. Niches sometimes are terminated by a simple label, but more commonly by a canopy, and with a bracket or corbel for the figure, in which case they are often called *tabernacles*.

Octastyle.—A portico of eight columns in front.

Odeion.—Among the Greeks, a circular theatre wherein the poets and musicians rehearsed their compositions previous to the public production of them.

Opisthodomos.—The same as the Roman posticum, being the enclosed space behind a temple to which the priests alone had access, and commonly employed to contain the treasure of the temple or of the state.

Oratory.—A small chapel or place for prayer for the use of private individuals; generally attached to a mansion, but sometimes to a church. The name is also given to small chapels built to commemorate some special deliverance.

Order.—A column with its entablature and stylobate is so called. The term is the result of the dogmatic laws deduced from the writings of Vitruvius, and has been exclusively applied to those arrangements which they were thought to warrant. (For the different orders, see separate heads.)

Oriel.—See BAY-WINDOW.

Orientation.—The deviation of a structure from due east. It is supposed that the chancel of a Christian church points to that part of the east in which the sun rises on the day of the church's patron saint.

Panel.—Properly, the piece of wood framed within the styles and rails of a door, filling up the aperture, but often applied both to the whole square frame and to the sinking itself; also to the ranges of sunken compartments in cornices, groined vaults, ceilings, etc. Wooden ceilings, which are very common, are composed of thin oak boards nailed to the rafters, collars, etc., and divided into panels by oak mouldings fixed on them, with carved bosses at the intersections.

Paradise.—A word of uncertain origin, but supposed to be a corruption of *paradisus*, an enclosed garden. Paradises were open places surrounded with an enceinte or stone parapet in front of cathedrals or other great buildings, and probably were used to keep the people from pressing on and thus interfering with the marshalling of the public processions.

Parapet.—A dwarf wall along the edge of a roof or round a lead-flat, terrace-walk, etc., to prevent persons from falling over, and as a protection to the defenders in case of a siege. Parapets are either plain, embattled, perforated, or panelled.

Pavilion.—A turret or small building, generally insulated and comprised under a single roof. The term is also applied to the projecting parts in front of a building. Pavilions are usually higher than the rest of the building.

Pedestal.—A term generally applied to any parallelogramic or cylindrical mass used as the stand or support of any single object, as a statue or a vase.

Pediment.—That part of a portico which rises above its entablature to enclose the end of the roof, whose triangular form it takes.

Pendant.—An elongated boss, either moulded or foliated, such as hangs down from the intersection of groins, especially vaulting or at the end of ham
(See *pl.* 30. *fig.* 5.)

Pendentive.—An arch which cuts off, as it were, the corners of a square building internally, so that the superstructure may become an octagon or a dome. In mediæval architecture arches of this kind, when under a spire in the interior of a tower, are called *squinches*.

Pent-house.—A structure which stands out from the main building, and whose roof slopes wholly on one side. Also a projection over a window, door, flight of stairs, etc., to form a protection against the weather.

Peribolus.—Any enclosed space is a peribolus, but the term is applied particularly to the sacred enclosure about a temple. The wall forming the enclosure is also called a peribolus.

Peripteros.—A temple or other structure with the columns of its ends or porticoes returned on its sides as wings at the distance of one intercolumniation from the walls. Almost all the Doric temples of the Greeks were peripteral.

Peristyle.—A range of columns encircling an edifice. The columns of a Greek peripteral temple form a peristyle also.

Perpendicular.—The third and last of the pointed or Gothic styles of architecture used in England. It was developed from the Decorated during the latter part of the fourteenth century, and continued in use until the middle of the sixteenth century, when it gave way to the style called "Elizabethan." Its chief characteristics are a general prevalence of perpendicular lines, panelling of flat surfaces, and the multiplicity of small shafts with which the piers, etc., are overlaid. (See also p. 204.)

Piers.—The solid parts of a wall between windows, and between voids generally. The term is also applied to masses of brick-work or masonry which are insulated to form supports to gates or to carry arches.

Pilaster.—An inferior sort of column or pillar; a projection from or against a pier, with the form and decorations of *antæ*, but frequently (always in Roman examples) having capitals shaped like those columns.

—A wo

to denote

- the round or polygonal piers or those surrounded with clustered columns which carry the main arches of a building. The small pillars at the jambs of doors and windows and in arcades, also those slender columns attached to pillars or standing detached, are generally called *SHAFTS* (*q. v.*).
- Pinnacle.**—An ornament originally forming the cap or crown of a buttress or small turret, but afterward used on parapets at the corners of towers and in many other situations.
- Pitch.**—The proportion of the height of a roof to its span. (See *GABLE*.)
- Plan.**—A horizontal geometrical section of the walls of a building, or indications, on a horizontal plane, of the relative positions of the walls and partitions, with the various openings, such as windows and doors, recesses and projections, chimneys and chimney-breasts, columns, pilasters, etc. The cross- and intersecting-lines of the plans of cathedrals and churches indicate the system of vaulting. *Plan* is often incorrectly used in the sense of *DESIGN* (*q. v.*).
- Polychromy.**—The decoration of exteriors and interiors of buildings with colors and tints. When executed in a single color, it is called *monochromy*.
- Porch.**—A covered erection forming a shelter to the entrance-door of a building. The earliest known porches are the long arcaded ones in front of the early Christian basilicas. (See *NARTHEX*.)
- Portal.**—The deeply-recessed and richly-decorated entrance-doors to cathedrals are styled portals.
- Portcullis.**—A strong framed grating of oak, the lower points shod with iron, and sometimes entirely made of metal, hung so as to slide up and down in grooves with counterbalances, and intended to protect the gateways of castles, etc. The defenders, having opened the gates and lowered the portcullis, could send arrows and darts through the gratings, and yet the assailants could not enter.
- Portico.**—An open space before the door or other entrance to any building fronted with columns. A portico is distinguished as *prostyle*, or *in antis*, accordingly as it projects from or recedes within the building, and is further designated by the number of columns of which its front may consist. (See *pl. 6*.)
- Posticum.**—A portico behind a temple.
- Presbytery.**—A word applied in a very ambiguous way to various parts of large churches. Some consider it to be the choir itself; others, what is now termed the *sacrarium*. Traditionally, however, it seems to be applied to the vacant space between the back of the high altar and the entrance to the Lady-chapel or *retro choir*.
- Priory.**—A monastic establishment, generally in connection with an abbey, and presided over by a prior, who was a subordinate to the abbot and held much the same relation to that dignitary as a dean holds to a bishop. (See *ABBAY*.)
- Pronaos.**—The inner portico of a temple, or the space between the porticus, or outer portico, and the door opening into the cella. This is a conventional use of the term, for, strictly, the pronaos is the portico itself.
- Propylæum.**—Any structure or structures forming the entrance to the peribolus of a temple; also the space lying between the entrance and the temple. In common usage this term in the plural (*propylæa*) is almost restricted to the entrance to the Acropolis of Athens, which is known by it as a name. The form *propylon* occurs in the Latin of Vitruvius.
- Prostyle.**—A portico the columns of which project from the building to which it is attached.
- Pseudo-dipteral.**—When the inner row of columns of a dipteral arrangement is omitted and the space from the wall of the building to the columns is preserved, the building is pseudo-dipteral.
- Pseudo-peripteral.**—A temple which has the columns on its flanks attached to the walls, instead of being arranged as in a *PERIPTEROS* (*q. v.*), is termed pseudo-peripteral.
- Pulpit.**—A raised platform with enclosed front whence sermons, homilies, etc., were delivered. Pulpits were probably derived in their modern form from the ambones in the early Christian church. There are many old pulpits of stone, though the ma-

- jority are of wood. Those in the churches are generally hexagonal or octagonal; some stand on stone bases, others on slender wooden stems, like columns. (See Vol 2, *pl.* 55.) The designs vary according to the periods in which they were erected, having the panelling, tracery, cuspings, crockets, and other ornaments then in use. Some are extremely rich and ornamented with color and gilding; a few also have fine canopies or sounding-boards. Their usual place is in the nave, mostly on the north side, against the second pier from the chancel arch. The pulpits in the Mohammedan mosques are quite different in form, being usually canopied and approached by a straight flight of steps. These have a doorway at the foot, with an architrave and a boldly-moulded head, the whole of the work to this and to the stairs, parapet, and pulpit itself being of wood richly inlaid, and often in part richly painted and gilt.
- Pylon.**—The tower of truncated pyramidal form on either side of the gateways of Egyptian temples.
- Pyramidion.**—The small flat pyramid which terminates the top of an obelisk.
- Quadripartite.**—The simplest form of groined vaulting, each bay being divided into four compartments, the intersecting arches being of equal height.
- Quatrefoil.**—Any small panel or perforation in the form of a four-leaved flower.
- Quoins.**—Large squared stones at the angles of buildings, buttresses, etc.; generally used to stop the rubble or rough stonework, and that the angles might be true and stronger.
- Rathhaus.**—See *HÔTEL DE VILLE*.
- Refectory.**—The hall of a monastery, convent, etc., where the religious took their meals together. It much resembled the great halls of mansions, castles, etc., except that there frequently was a sort of ambo, approached by steps, from which to read the *legenda sanctorum*, etc., during meals. (See *PULPIT*.)
- Regula.**—The short fillet or rectangular block on the architrave of the Doric entablature.
- Relieving-arch.**—An arch turned in the body of a wall to relieve a lintel or any part of the masonry below it from a part of the superincumbent weight. The same as *discharging-arch*.
- Renaissance.**—Literally, new birth. The term is applied to the revival of classical principles in art which became the prevailing style in Italy during the fifteenth, and in the rest of Europe in the sixteenth, century.
- Reredos.**—The screen or other ornamental work at the back of an altar. In some large cathedrals this is a mass of splendid tabernacle-work reaching nearly to the groining. (See *CIBORIUM*.)
- Reversed Curve.**—See *CYMA*.
- Rib.**—An arch-formed piece of timber for supporting the lath-and-plaster work of a vault. (See *GROIN-RIB*, *GROINED VAULTING*.)
- Rococo.**—A debased variety of the Louis XV. style of ornament. It is also applied to anything bad or tasteless in decoration.
- Roll-moulding or Scroll-moulding.**—A moulding so called because it resembles the section of half a scroll or flexible book rolled up so that the edge projects over the other part.
- Romanesque.**—A modification of the classical Roman form, which was introduced between the reigns of Constantine and Justinian, and was an attempt to adapt classical forms to Christian purposes. It is a degenerated and hybrid style of architecture and of ornament.
- Rose-window.**—A name given to a circular window with radiating tracery; called also *wheel-window*.
- Rustication.**—A mode of building masonry wherein the faces of the stones are left rough, the sides only being wrought smooth where the union of the stones takes place.
- Sacristy.**—A small chamber attached to churches, where the chalices, vestments, books, etc., were kept by the officer called the *sacristan*. In the early Christian basilicas there were two semicircular recesses or apses, one on each side of the altar; one of these served as a sacristy, and the other as the *bibliotheca*, or library.
- Screen.**—Any construction subdividing one part of a building from another, as a choir, chantry, chapel, etc. The chief screens in

- a church are those which enclose the choir or the place where the breviary-services are recited. This is done on the Continent not only by doors and screen-work, but also, when these are of open-work, by curtains, the laity having no part in these services.
- Scroll.**—Synonymous with *VOLUTE* (*q. v.*), but commonly applied to ordinary purposes, while *volute* is generally restricted to the scrolls of the Ionic capital.
- Section.**—A drawing showing the internal heights of the various parts of a building. It supposes the building to be cut through entirely, so as to exhibit the walls, the heights of the internal doors and other apertures, the heights of the storeys, thicknesses of the floors, etc. It is one of the species of drawings necessary to the exhibition of a *DESIGN* (*q. v.*).
- Set-off.**—The horizontal line shown where a wall is reduced in thickness, and consequently the part of the thicker portion appears projecting before the thinner. The portions of buttress-caps which recede one behind another are also called set-offs.
- Sgraffito.**—A method of painting on stucco in which a ground of dark stucco is covered with a coat of white and the design is formed by scraping this away for the shadows.
- Shaft.**—In classical architecture, that part of a column between the necking and the apophyge at the top of the base. In later times the term is applied to slender columns either standing alone or in connection with pillars, buttresses, jambs, vaulting, etc.
- Shingle.**—A sort of wooden tile, generally of oak, used, in places where timber is plentiful, for covering roofs, spires, etc. Shingles are generally plain, but the ends are sometimes rounded, pointed, or cut into ornamental form.
- Shrine.**—A sort of ark or closet to hold relics. Sometimes shrines are merely small boxes, generally with raised tops like roofs, sometimes actual models of churches, sometimes large constructions.
- Skew-back.**—That part of a straight or curved arch which recedes beyond the springing from the vertical line of the opening.
- Soffit.**—The inverted horizontal face of anything; as, for example, of an entablature resting on and lying open between the columns or the under face of an arch where its thickness is seen.
- Span.**—The width or opening of an arch between the walls, etc., from which it springs; also the width of a roof between the plates.
- Spandrel.**—The triangular space between any arch or curved brace and the level label, beams, etc., over the same.
- Spire.**—A sharply-pointed pyramid or large pinnacle, forming a finish to the tops of towers. (See *TOWER*.)
- Springer.**—The stone from which an arch springs. In some cases this is a capital or an impost; in other cases the mouldings continue down the pier. The lowest stone of the gable is sometimes called a *springer*. (See *ARCH*.)
- Stadium.**—In ancient architecture, an open space wherein the athletes or wrestlers exercised running, and in which they contested the prizes. The word also denotes a measure of length among the Greeks of one hundred and twenty-five paces.
- Stalactite.**—An overhanging projection of a vaulted surface presenting a beautiful resemblance to a stalactite.
- Stall.**—A fixed seat in the choir for the use of the clergy. In early Christian times the *thronus cathedrâ*, or seat of the bishop, was in the centre of the apsis or bema, behind the altar and against the wall; those of the presbyters also were against the wall, branching off from side to side round the semicircle. In later times the stalls occupied both sides of the choir, return-seats being placed at the ends for the prior, dean, precentor, chancellor or other officer. The seats are very peculiar. (See *Vol. 2, pl. 55*.)
- Stereobate.**—A basement; distinguished from the nearly equivalent *STYLOBATE* (*q. v.*) by the absence of columns.
- Stilted.**—Anything raised above its usual level, as an arch or vault the curve of which does not begin from the impost, but is elevated upon a vertical continuation of the intrados and archivolt mouldings.
- Stoa.**—The Greek equivalent for the Latin *porticus* and the Italo-English *PORTICO* (*q. v.*).

Storey.—When a house has rooms one over the other, each set of chambers divided horizontally by the floors is called a storey. They are thus named in the different languages :

| | English. | French. | German. |
|------------------|---------------|------------------|-----------------|
| Lowest storey . | Basement. | Souterrain—Cave. | Kellergeschoss. |
| Ground storey . | Ground floor. | Rez de chaussée. | Bodengeschoss. |
| Half storey . . | Mezzanine. | Entresol. | |
| First storey . . | First floor. | Premier étage. | Hauptgeschoss. |
| Second storey . | Second floor. | | |
| Upper storey . | Garret. | Mansard. | Dachgeschoss. |

String-course.—A narrow, vertically-faced, and slightly-projecting course in an elevation. If window-sills are made continuous, they form a string-course; but if this course is made thicker or deeper than ordinary window-sills, or covers a set-off in the wall, it becomes a **BLOCKING-COURSE** (*q. v.*). Also horizontal mouldings running under windows, separating the walls from the plain part of the parapets, dividing towers into storeys or stages, etc.

Stucco.—A fine plaster for covering walls; prepared by various methods, as by mixing gypsum and glue or pulverized white marble with fine sand, gypsum, and water.

Stupa.—A pillar or mound containing relics of Buddha. (See **TOPE**.)

Style.—The term "style" in architecture has obtained a conventional meaning beyond its simpler one, which applies only to columns and columnar arrangements. It is now used to signify the differences in the mouldings, general outlines, ornaments, and other details which exist between the works of various nations, and also those differences which are found to exist between the works of any one nation at different times.

Stylobate.—A basement to columns. "Stylobate" is synonymous with "pedestal," but is applied to a continued and unbroken substructure or basement to columns, while the latter term is confined to insulated supports. (See **STEREOBATE**.)

Sudatorium.—The hot room in a Roman bath.

Tabernacle.—A species of niche or recess in which an image may be placed. The

word is also often used for the receptacle of relics, which was often made in the form of a small house or church. (See **SHRINE**.)

Tambour.—A term denoting the wall of a circular temple surrounded with columns, and, further, the circular vertical part below a cupola.

Tee.—The umbrella-shaped termination or finial to the Buddhistic tope.


Terminal.—A figure of which the upper part only, or perhaps the head and shoulders alone, is carved, the rest running into a parallelopiped, and sometimes into a diminishing pedestal, with feet indicated below, or even without them, is called a terminal figure.

Tetrastyle.—A portico of four columns in front.

Thermæ.—See **BATH**.

Tholobate.—That on which a dome or cupola rests. This is a term not in general use, but it is not the less of useful application.

Thrust.—The lateral pressure exercised by the stones of an arch or a vault.

Tiles.—Flat pieces of clay burned in kilns to cover roofs in place of slates or lead. Pan-tiles are curved  so that when laid upon a roof each tile overlaps the edge of the next one to it.

Tope.—A Buddhistic sepulchral monument, cone-shaped and round at the top. (See **DHAGABA**.)

Torus.—A protuberance or swelling; a moulding whose form is convex and generally nearly approaches a semicircle. It is most frequently used in bases, and is generally the lowest moulding in a base.

Tower.—An elevated building originally designed for purposes of defence. Towers are of the remotest antiquity, and are, indeed, mentioned in the earliest Scriptures. In mediæval times they are generally attached to churches, to cemeteries, to castles, or are used as bell-towers (*belfries*) in public places of large cities. When a tower is surmounted by a spire, the structure is generally called a *steeple*.

Tracery.—The ornamental filling in of the heads of windows, panels, circular windows, etc., which has given such characteristic to the architecture of the fourteenth century. (See *fig. 14*).

- Transept.**—That portion of a cruciform church which passes transversely at right angles between the nave and the choir. It is sometimes called the *cross*, and each of its parts to the right and left of the nave is called a *cross-aisle*.
- Transom.**—The horizontal construction which divides a window into heights or stages. Transoms are sometimes simple pieces of mullions placed transversely as cross-bars, and in later times are richly decorated.
- Treasury.**—A chamber of circular plan, generally subterranean, approaching in interior form that of a pointed vault; also called *tholos*.
- Trefoil.**—A cusping the outline of which is derived from a three-leaved flower or leaf, as the *quatrefoil* and *cinquefoil* are from those with four and five.
- Tribunal.**—The semicircular recess in the basilica where the judges sat, and where in after-times the altar was placed. It is generally roofed with a half-dome or *concha*.
- Triforium.**—The arcaded storey between the lower range of piers and arches and the clere-storey.
- Triglyph.**—The vertically-channelled tablets of the Doric frieze are called triglyphs because of the three angular channels in them, two perfect and one divided, the two chamfered angles or hemispheres being reckoned as one. The square sunk spaces between the triglyphs on a frieze are called *metopes*. (See *Frontispiece*.)
- Tripod.**—A table or seat with three legs.
- Triumphal Arch.**—A monumental structure, usually a portico, with one or more arches, erected across a public road for triumphal processions to pass under. The so-called "Janus arches" were erected above the streets and squares of Rome much in the same manner as triumphal arches. They were usually four-sided, that is, presenting the same face on four sides.
- Triumphal Column.**—A monument commemorative of some triumph. It usually consisted of a gigantic shaft and a pedestal, and was surmounted by a statue. The surface of the shaft was either covered with reliefs of many figures spirally arranged, or was merely treated with architectural forms.
- Tudor Arch.**—An arch of four centres, flat for its span, having two of its centres in or near the spring and the other two far below.
- Tufa.**—A mass of volcanic scoriæ and ashes consolidated.
- Tumulus.**—A sepulchral mound of ancient and prehistoric construction.
- Turret.**—A small tower at the angles of large buildings, especially castles, sometimes overhanging and built on corbels, and sometimes rising from the ground.
- Tympanum.**—The triangular recessed space enclosed by the cornice which bounds a pediment. The Greeks often placed sculptures representing subjects connected with the purposes of the edifice in the tympana of temples, as at the Parthenon and Ægina.
- Vault.**—An arched ceiling or roof. A vault is, indeed, a laterally-conjoined series of arches. The arch of a bridge is, strictly speaking, a vault. Intersecting vaults are said to be groined. (See the various forms under separate heads.)
- Vaulting-shaft.**—A small column or series of clustered shafts rising from above the capitals of the pillars of an arcade, and generally supported on a corbel, and thence rising and finishing with a capital from which the various groin-ribs spring.
- Vihara.**—In Buddhistic architecture, a monastery or cloister, of which no built examples exist. The so-called *viharas* are rock-cut caves.
- Vimana.**—A Hindu temple consisting merely of a building in the form of a pyramid, allowing of several storeys which recede one above the other.
- Volute.**—The spiral ornament which forms the characteristic of the Ionic capital. The common English term is *SCROLL* (*q. v.*).
- Vousoir.**—A name in common use for the various wedge-shaped stones of an arch. The central uppermost vousoir is the *key-stone*; the lowest, adjoining the impost, a *springer*.
- Wall-arch.**—That portion of a vertical wall—of round- or pointed-arch shape—which rises above the imposts of a cross-vault or Gothic compartment.
- Wall-plate.**—A horizontal piece of timber called a *plate*; properly, that at the top of a building, under the roof.

| | PAGE | | PAGE |
|---|---------|---|-------------|
| 6. Aurelian's city-wall | 90 | ✓ PLATE 11.—ROMAN. | |
| 7. Pons Fabricius, Rome | 80 | 1. Temple of Vesta, ruins | 81 |
| 8. Street of the Tombs, Pompeii | 77 | 2. Mausoleum of Hadrian | 88 |
| 9. Roman bridge and aqueduct | 80 | 3. Trajan's Column | 86 |
| 10. Roman aqueduct, Segovia | 86 | 4. Column of Marcus Aurelius | 88 |
| 11. Porta Nigra at Treves | 85, 156 | 5. Temple of the Sun, portal | 90 |
| ✓ PLATE 10.—ROMAN. | | 6. Entablature, capital and base, Temple of the Sun | 90 |
| 1. Monument of the Secundini | 89 | 7. Capital and entablature, Gate to the Temple of the Sun | 90 |
| 2. Porte d'Arroux, Autun | 89 | 8. Coffered ceiling, Temple of the Sun | 91 |
| 3. Arch of Septimius Severus | 83, 89 | 9. Basilica of Peace, Rome | 92 |
| 4. Arch of Constantine | 83, 93 | 10. Temple of Jupiter, cross-section | 91 |
| 5. Coliseum at Rome | 84 | ✓ PLATE 12.—ROMAN. | |
| 6. Coliseum, original architecture | 79, 84 | 1, 2. Baths of Caracalla | 89, 91, 104 |
| 7. Casa di Campionet, Pompeii, section | 83 | 3-6. Ruins at Baalbec | 90 |
| 8. Entablature and capital of the Pantheon | 81 | 7. Circular temple, Baalbec | 91 |
| 9, 10. Entablatures and capitals, Temple of the Sun | 90 | 8. Gate to the Temple of the Sun | 90 |
| 11. Entablature and capital, Temple of Jupiter Stator | 81 | | |

EARLY CHRISTIAN, MEDIEVAL, AND RENAISSANCE ARCHITECTURE.

| | | | |
|--|--------------|---|----------|
| ✓ PLATE 13.—EARLY CHRISTIAN. | | 9. Church of St. Front, plan | 113 |
| 1. Church at Baquoza, choir | 105 | 10. Church at Daphne, dome | 113, 114 |
| 2. Church at Tourmanin | 105 | 11. Church of St. Taxiarchis, dome | 113, 114 |
| 3. Church at Qualb-Louzeh, choir | 105 | 12. Katholikon, west end | 113, 114 |
| 4. Church at Qualb-Louzeh, interior | 105 | 13. Katholikon, east end | 113, 114 |
| 5. Capital from church at Deir-Seta | 106 | 14. Church of St. Mary, Semendria | 114 |
| 6. Capital from church at Baquoza | 106 | 15. Martorana, Palermo, interior | 114 |
| 7. Detail from tomb-pyramid, El-Barah | 106 | 16. Church, S. Giov. degli Eremiti | 114 |
| 8-10. Church of the Holy Sepulchre, plans | 98 | ✓ PLATE 17.—INDIAN. | |
| 11. Church of St. Simeon Stylites, plan | 103 | 1. Temple of Indra, plan | 119 |
| 12. Cathedral at Bosra, plan | 103 | 2. Temple of Indra, forecourt | 119 |
| 13. Church of Ezra, plan | 103 | 3. Temple of Indra, grotto | 119 |
| 14. Church at Moudjeleia, plan | 103 | 4. Temple of Viswakarma | 119 |
| ✓ PLATE 14.—EARLY CHRISTIAN. | | 5. Temple of Dhumnar-Lena, plan | 119 |
| 1. Church of St. John Lateran, plan | 98, 110 | 6. Kailasa, plan | 119 |
| 2. St. Paul's outside-the-walls, interior | 101 | 7. Great Tope, Sanchi | 117 |
| 3. St. Paul's outside-the-walls, plan | 101 | ✓ PLATE 18.—INDIAN AND CHINESE. | |
| 4. S. Apollinare in Classe, section | 104 | 1. Great Pagoda, Madura | 120 |
| 5. S. Apollinare, choir and campanile | 104 | 2. Choultry, Madura | 120, 121 |
| 6. S. Clemente, Rome, façade | 110 | 3. Temple of Confucius, entrance | 123 |
| 7-10. Capitals from Ravenna | 106 | 4. Boro-Budor Temple | 121 |
| ✓ PLATE 15.—EARLY CHRISTIAN. | | 5. Pavilion Star of Hope | 123 |
| 1. Minster at Aix-la-Chapelle, cross-section | 109 | ✓ PLATE 19.—SARACENIC. | |
| 2. Minster at Aix-la-Chapelle, plan | 109 | 1. Mosque El-Moyed | 131 |
| 3. Rotondo of S. Stefano, plan | 103 | 2. Alhambra, Abencerrages' Hall | 136 |
| 4. Church of S. Vitale, plan | 104 | 3. Alhambra, Court of the Lions | 136 |
| 5. Rotondo of SS. Sergius and Bacchus, plan | 104 | 4-7. Alhambra, decorative details | 142 |
| 6. Church of Sta. Sophia, elevation | 99, 104, 111 | 8-11. Church at Kurte-Ardshish, details | 142 |
| 7. Church of Sta. Sophia, interior | 99, 104 | ✓ PLATE 20.—SARACENIC. | |
| 8. Church of Sta. Sophia, plan | 99, 104 | 1. Mosque at Corlova | 127 |
| 9. Baptistery, St. John Lateran, plan | 101 | 2. Alcazar, Don Pedro's Hall | 135 |
| 10. Baptistery, Sta. Fosca, plan | 106 | 3. Alhambra, Court of the Lions | 135 |
| 11. Baptistery, S. Lorenzo, plan | 101 | 4. Alcazar, Ambassadors' Hall | 135 |
| ✓ PLATE 16.—BYZANTINE. | | ✓ PLATE 21.—SARACENIC. | |
| 1. Church of Sta. Irene, plan | 112 | 1. Kutab-Minar | 137 |
| 2. Church of Sta. Irene, interior | 112 | 2. Hall in a Madura palace | 141 |
| 3. St. Mark's, Venice, plan | 113 | 3. Church at Kurte-Ardshish | 114 |
| 4. St. Mark's, Venice, elevation | 113 | 4. Mosque | 127 |
| 5. Church of St. Elias, plan | 113 | 5. Great | 140 |
| 6. Agio Theotokos, plan | 113 | 6. A | 135, 130 |
| 7. Kamnekarea, Athens, plan | 113 | | |
| 8. Cloister church, St. Lucas, plan | 113 | | |

LIST OF ILLUSTRATIONS.

421

| ✓ | PLATE 22.—SARACENIC. | PAGE |
|-------|-------------------------------------|------|
| 1. | Mosque of Sultan Suleiman | 142 |
| 2. | Mosque of Sultan Bajazet | 142 |
| 3. | Seraskierat tower | 142 |
| 4. | Fountain of Sultan Achmet | 142 |
| 5, 6. | Wall-decorations | 142 |

| ✓ | PLATE 23.—RUSSIAN. | PAGE |
|----|---|------|
| 1. | Church of the Mother of God | 145 |
| 2. | Church of St. John Bogoslow | 145 |
| 3. | Cathedral Vassili Blashennoi | 145 |
| 4. | Church of SS. Nicolas and Stelpach. | 145 |
| 5. | Staircase of a Russian Boyar | 145 |

| ✓ | PLATE 24.—ROMANESQUE. | PAGE |
|-----|--|------|
| 1. | Church of Gernrode, interior | 152 |
| 2. | Church of Sta. Maria in Capitulo, interior | 156 |
| 3. | Cathedral of Limburg, interior | 183 |
| 4. | Cathedral of Speyer, plan | 155 |
| 5. | Convent-church, Limburg, plan | 155 |
| 6. | Nunnery-church, Ottmarsheim, plan | 156 |
| 7. | Cathedral of Worms, plan | 155 |
| 8. | Church of Sta. Maria in Capitulo, plan | 156 |
| 9. | Cistercian church, Eberbach, choir, plan | 161 |
| 10. | Castle Chapel, Landsberg, plan | 161 |
| 11. | Church of the Apostles, plan | 161 |
| 12. | Cloister church, Zinna, choir plan | 161 |
| 13. | Church of St. Godehard, plan | 162 |
| 14. | Cathedral of Mayence, plan | 155 |

| ✓ | PLATE 25.—ROMANESQUE. | PAGE |
|----|---|----------|
| 1. | Cathedral of Worms | 161 |
| 2. | Cathedral of Speyer | 155 |
| 3. | Church of the Apostles, Cologne | 155, 161 |
| 4. | Cathedral at Limburg | 183 |
| 5. | Cathedral of Bamberg | 183 |
| 6. | Church at Gelnhausen | 182 |
| 7. | Church of St. Gereon | 161, 182 |

| ✓ | PLATE 26.—ROMANESQUE. | PAGE |
|--------|---|----------|
| 1. | Convent Maulbronn, plan | 162, 184 |
| 2. | Convent Maulbronn, wing, interior | 184 |
| 3. | Convent Maulbronn, refectory | 184 |
| 4. | 5. Dwelling-houses, Cologne | 184 |
| 6. | Capital, church at Mauermünster | 185 |
| 7. | 8. Capitals, Speyer Cathedral | 184, 185 |
| 9. | Capital, church at Schwarzrheindorf | 185 |
| 10. | Capital, Goslar Cathedral | 185, 186 |
| 11. | Capital, Minster of Basel | 185 |
| 12. | Capital, Baptistery of St. Gereon | 185, 186 |
| 13-15. | Capitals, Church of the Holy Cross | 185, 186 |
| 16. | Capital, church at Maulbronn | 185, 186 |
| 17. | Arch-frieze, Church of the Holy Cross | 185 |
| 18. | Arch-frieze, Church of St. Jacob | 185 |
| 19. | Romanesque pillar-base | 185 |
| 20-22. | Ornament of column-bases | 185 |
| 23. | Pedestal, church at Heiligenkreuz | 185 |

| ✓ | PLATE 27.—ROMANESQUE. | PAGE |
|-----|--|------|
| 1. | Church S. Miniato, interior | 166 |
| 2. | Cathedral of Pisa | 166 |
| 3. | Capello Palatina, interior | 132 |
| 4. | Cathedral at Trau. | 166 |
| 5. | St. Paul's outside-the-walls, cloister | 164 |
| 6. | Church of S. Zeno, west end | 166 |
| 7. | Cathedral at Zara, west end | 166 |
| 8. | Cathedral at Verona, portal | 166 |
| 9. | Cathedral S. Zeno, portal | 166 |
| 10. | Cathedral at Modena, portal | 166 |

| ✓ | PLATE 28.—ROMANESQUE. | PAGE |
|-----|--|------|
| 1. | Abbey of St. Étienne | 169 |
| 2. | Church of Notre Dame du Port | 168 |
| 3. | Cornice console, Notre Dame du Port | 168 |
| 4. | Church of Notre Dame la Grande | 169 |
| 5. | Church St. Trophime, cloister | 169 |
| 6. | Church St. Trophime, portal | 169 |
| 7. | Church at Conques, nave-system | 168 |
| 8. | Church at Paray-le-Monial, nave-system | 169 |
| 9. | Capital, church at Benoit-sur-Loire | 185 |
| 10. | Capital, church at Vézelay | 185 |

| ✓ | PLATE 29.—ROMANESQUE AND GOTHIC. | PAGE |
|-----|---|---------------|
| 1. | Cathedral Notre Dame, Paris, plan 177, 180, 181 | 177, 180, 181 |
| 2. | Cathedral Notre Dame, section | 180, 181 |
| 3. | Cathedral Notre Dame, façade | 181, 190 |
| 4. | Cathedral Notre Dame, ornament | 185 |
| 5. | Cathedral at Laon, plan | 178 |
| 6. | Cathedral at Noyon, plan | 177 |
| 7. | Cathedral at Chartres, plan | 192 |
| 8. | Cathedral at Rheims, nave, section | 190 |
| 9. | Cathedral at Amiens, section | 191 |
| 10. | Cathedral at Beauvais, apse, section | 192 |

| ✓ | PLATE 30.—GOTHIC. | PAGE |
|--------|--|----------|
| 1. | Cathedral of York | 203 |
| 2. | Cathedral of Canterbury | 203 |
| 3. | Church at Saint-Neots | 204 |
| 4. | Cathedral of Lichfield | 202 |
| 5. | Chapel of Henry VII. | 203, 205 |
| 6. | Great Hall, Westminster, roof | 203 |
| 7. | Church at Fotheringay, portal | 204 |
| 8. | Church of St. Michael, window | 204 |
| 9, 10. | Gable-crosses, Salisbury Cathedral | 204 |
| 11. | Gable-cross, Merton College | 204 |
| 12. | Gable-cross, Mary Church | 204 |

| ✓ | PLATE 31.—GOTHIC. | PAGE |
|---------|---|----------|
| 1. | Church of St. Lawrence, Nuremberg | 218 |
| 2. | Cathedral of Magdeburg, plan | 183, 210 |
| 3. | Cathedral of Ratisbon, choir | 212 |
| 4. | Cathedral of Ratisbon, plan | 212 |
| 5. | Minster of Ulm, façade | 219 |
| 6. | Cathedral of Cologne, nave | 192, 209 |
| 7, 8. | Keystones, church at Gladbach | 410 |
| 9. | Capital, Cathedral of Cologne | 193 |
| 10, 11. | Ornaments of capitals, Freiburg Minster | 209 |
| 12. | Capital, Church of Our Lady, Esslingen | 207 |
| 13. | Water-jet, Cathedral of Prague | 217 |
| 14. | Geometrical tracery | 415 |

| ✓ | PLATE 32.—GOTHIC. | PAGE |
|----|---|------|
| 1. | Minster of Freiburg | 209 |
| 2. | Minster of Strasburg | 216 |
| 3. | Cathedral of Cologne, façade | 209 |
| 4. | Church of St. Stephen, Vienna | 216 |
| 5. | Cathedral of Antwerp | 219 |

| ✓ | PLATE 33.—GOTHIC. | PAGE |
|----|---|----------|
| 1. | Cathedral of Cologne, plan | 209 |
| 2. | Cathedral of Prague, plan | 217 |
| 3. | Cathedral of Prague, interior | 217, 218 |
| 4. | Minster at Ulm, plan | 219 |
| 5. | Cathedral of Antwerp, plan | 219 |

| ✓ | PLATE 34.—GOTHIC. | PAGE |
|----|---------------------------------------|------|
| 1. | Wooden houses, Halberstadt | 225 |
| 2. | Church of St. Mary Prenzlau | 221 |
| 3. | Town-hall, Tangermünde | 225 |

| | PAGE | | PAGE |
|---|----------|---|----------|
| 4. College Jagellon, court | 225 | ✓ PLATE 42.—RENAISSANCE. | |
| 5. Gable, Catherine Church, Brandenburg | 221 | 1. Church, Sta. Maria delle Grazie | 241 |
| 6. Gable, Corpus Christi Church, Cracow | 221 | 2. Staircase, Doge's palace | 241 |
| ✓ PLATE 35.—GOTHIC. | | 3. Scuola di S. Marco, Venice | 241 |
| 1. Schlüsselsfeld House | 225 | 4. Biblioteca of S. Marco | 246, 276 |
| 2. Dwelling of the grandmaster, façade | 224 | 5. Palazzo Vendramin-Calergi | 241 |
| 3. Stone house, Frankfort-on-the-Main | 225 | 6. Palazzo Pesaro, Venice | 243 |
| 4. Town-hall, Münster | 224 | ✓ PLATE 43.—RENAISSANCE. | |
| 5. Town-hall, Louvain | 225 | 1. Church of St. Peter, Rome, plan | 246 |
| 6. Town-hall, Breslau | 225 | 2. Church of St. Peter, Rome | 246 |
| 7. Town-hall, Oudenarde | 225 | 3. Palazzo della Cancelleria | 244 |
| ✓ PLATE 36.—GOTHIC. | | 4. Palace at Rome (Peruzzi) | 244 |
| 1. Old city-bridge gate, Prague | 225 | 5. Palazzo Farnese, façade, section | 246 |
| 2. St. Paul's Gate, Basle | 225 | 6. Castle of Caprarolo | 247 |
| 3. Neustadt Gate, Tangermünde | 225 | 7. Italian Villa (Palladio) | 249 |
| 4. Uenglinger Gate, Stendal | 225 | ✓ PLATE 44.—RENAISSANCE. | |
| 5. Florian Gate, Cracow | 225 | 1. Château Madrid | 254 |
| 6. Castle Vajda-Hunyad | 225 | 2. Château Chambord | 253 |
| ✓ PLATE 37.—GOTHIC. | | 3. Palais de Justice, Beaugency | 254 |
| 1. Palais de Justice, Rouen | 227, 252 | 4. Hôtel Ecoville, Caen | 254 |
| 2. House of Jacques Cœur | 227 | 5. Château Nantouillet | 253 |
| 3. Hôtel Cluny, Paris | 227 | 6. Stairs, château at Blois | 252 |
| 4. Fortification-tower | 226 | 7. Château d'Ecouen | 255 |
| 5. Nesle-tower, Paris | 226 | 8. Château Bury | 254 |
| 6. Château Josselin, window | 227, 252 | 9. House of Francis I. | 254 |
| 7. Hôtel de la Tremouille, window | 227 | 10. Lantern, Château Chambord | 253 |
| 8. Hall at Eltham, England | 205 | 11. Capital from Fontainebleau | 255 |
| ✓ PLATE 38.—GOTHIC. | | 12. Capital from House of Francis I. | 255 |
| 1. Cathedral of Milan, plan | 233 | ✓ PLATE 45.—RENAISSANCE. | |
| 2. Cathedral of Milan, choir | 233 | 1. Church of St. Peter, choir | 253 |
| 3. Cathedral of Florence, plan | 232 | 2. Hôtel de Ville, Paris | 254 |
| 4. Campanile, Florence Cathedral | 232 | 3. Louvre, section of court | 255 |
| 5. Cathedral of Orvieto | 232 | 4. Louvre, gallery of Henry IV. | 256 |
| 6. Altar, Church of Or San Michele | 232, 234 | 5. Tuileries, section garden-façade | 255 |
| 7. Scaliger Monument, Verona | 234 | 6. Church of St. Étienne du Mont | 253 |
| ✓ PLATE 39.—GOTHIC. | | 7. Palais de Justice, Orleans façade, section | 254 |
| 1. Palazzo Vecchio, Florence | 234 | 8. Tomb of Louis XII., Paris | 253 |
| 2. Palazzo Comunale, Piacenza | 234 | 9. Château Anet, entrance | 255 |
| 3. Palazzo Buonsignora, Siena | 234 | 10. French pillar (De l'Orme) | 256 |
| 4. Palazzo Giovannelli, Venice | 235 | ✓ PLATE 46.—RENAISSANCE. | |
| 5. Palazzo Ducale, Venice | 235 | 1. Knight's House, Heidelberg | 266 |
| 6. Casa de Audiencia, Barcelona | 229 | 2. Heidelberg Castle, court | 265, 267 |
| 7. Capital, Palazzo Bernardo, Venice | 235 | 3. Gewandhaus, Brunswick | 266 |
| 8-10. Fountains at Venice | 235 | 4. Town-hall, Cologne, portico | 265 |
| 11, 12. Capitals, ancient castle, Trent | 235 | 5. Town-hall, Bremen | 268 |
| ✓ PLATE 40.—RENAISSANCE. | | 6. Town-hall, Schweinfurt | 265 |
| 1. Certosa di Pavia, façade | 240 | ✓ PLATE 47.—RENAISSANCE. | |
| 2, 3. Capitals of the Certosa di Pavia | 240 | 1. Pellerhaus, Nuremberg, court | 268 |
| 4. Sta. Maria della Salute, Venice | 274 | 2. Catholic Church, Dresden | 279 |
| 5. Church of the Redeemer, Venice | 249 | 3. Church of Our Lady, Dresden | 279 |
| 6. Church of S. Zaccaria, Venice | 241 | 4. Zwinger, Dresden | 277 |
| 7. Tomb of the Doge Vendramin | 241 | 5. Imperial palace, Vienna | 276 |
| 8. Certosa di Pavia, arcade | 240 | 6, 7. Palace of Prince Eugene | 277 |
| 9. Pilaster-capital, Florence | 238 | 8. Cupola, Church of St. Charles | 277 |
| 10. Console from Doge's palace | 241 | ✓ PLATE 48.—RENAISSANCE. | |
| 11. Escutcheon from a monument | 407 | 1. Dome, Église des invalides, Paris | 274 |
| ✓ PLATE 41.—RENAISSANCE. | | 2. Church of the Sorbonne, Paris | 274 |
| 1. Cupola, Florence Cathedral | 238 | 3. Church of the Sorbonne, section | 274 |
| 2. Palazzo Strozzi, façade | 241 | 4, 5. Dome, Church of Ste. Geneviève, section | 283 |
| 3. Palazzo Strozzi, section of court | 241 | 6. Church of St. Paul, London | 275 |
| 4. Palazzo Sauli, court | 247 | 7. Church of St. Isaac, St. Petersburg | 288 |
| 5. Palazzo Borghese, court | 271, 276 | ✓ PLATE 49.—RENAISSANCE. | |
| | | 1. Church of Ste. Madeleine, Paris | 287 |
| | | 2. Church of Ste. Madeleine, interior | 287 |

| | PAGE | | PAGE |
|--|----------|---|----------|
| 3. Vendôme column, Paris | 287 | 5. Museum, Dresden, middle pavilion . . . | 298 |
| 4. Arc de l'Etoile, Paris | 287 | 6, 7. New Theatre, Leipsic | 294 |
| 5. Brandenburg Gate, Berlin | 284 | 8. Musical Society building | 299 |
| 6. Royal Theatre, Berlin | 289 | 9. Palace Epstein, Vienna | 299 |
| 7. Glyptothek, Munich | 289 | ✓ PLATE 52.—MODERN ARCHITECTURE. | |
| 8. "Walhalla," Ratisbon | 289 | 1. Houses of Parliament, London | 302 |
| ✓ PLATE 50.—MODERN ARCHITECTURE. | | 2. Fountain at Prague | 303 |
| 1. Ludwigskirche, Munich | 290 | 3. Town-hall, Vienna | 304 |
| 2. Church of St. Michael, interior | 290 | 4. Commandantur, Vienna arsenal | 295 |
| 3. Hall of Fame, Munich | 289 | 5. Museum of Arms, Vienna arsenal | 295 |
| 4. Court-theatre, Dresden | 298 | 6. Fünfhauskirche, near Vienna | 304 |
| 5. Exposition building, Paris | 298 | 7. Votive church, Vienna | 303 |
| 6. Louvre and Tuileries, Paris | 255, 298 | 8. Court-theatre, Carlsruhe | 297 |
| ✓ PLATE 51.—MODERN ARCHITECTURE. | | 9. Trinkhalle, Baden-Baden | 297 |
| 1. Old Pinakothek, Munich | 293, 298 | 10. Church of St. Mark, Berlin, section . . . | 294 |
| 2. New Pinakothek, Munich | 291 | 11. Cupola, Church of St. Thomas, Berlin . . | 294 |
| 3. Propylæa, Munich | 289 | ✓ PLATE 53.—MODERN ARCHITECTURE. | |
| 4. Museum, Dresden | 298 | 1. Grand Opera-house, Paris | 325 |
| | | 2. Palais de Justice, Brussels | 326, 368 |

AMERICAN ARCHITECTURE.

| | | | |
|--|----------|---|-----|
| ✓ PLATE 54.—ABORIGINAL ARCHITECTURE. | | ✓ PLATE 61.—AMERICAN. | |
| 1. Teocalli, Papantla | 333 | 1. New City-hall, Philadelphia | 367 |
| 2. Teocalli, Xochicalco, corner | 333 | 2. Spandrels of New City-hall | 367 |
| 3. Gate at Labnah | 333 | ✓ PLATE 62.—AMERICAN. | |
| 4. Teocalli, Tuspan | 333 | 1. Casino, New York City | 371 |
| 5. Palace at Uxmal, ruins | 333 | 2. Music and Exposition Hall | 386 |
| 6. Teocalli, Tehuantepec | 333 | ✓ PLATE 63.—AMERICAN. | |
| 7. Palace de los Monjas, corner | 333 | 1. Art-Museum, Cincinnati, façade | 371 |
| 8. Wall-decoration | 333 | 2. Art-Museum, Cincinnati, plan | 371 |
| ✓ PLATE 55.—AMERICAN. | | 3. Library, Woburn | 369 |
| 1. Cathedral St. Louis | 344 | ✓ PLATE 64.—AMERICAN. | |
| 2. Christ Church, Philadelphia | 346 | 1. Mills Building | 382 |
| ✓ PLATE 56.—AMERICAN. | | 2. Pullman Palace-car Offices | 383 |
| 1. Cathedral of St. Patrick, façade | 358 | ✓ PLATE 65.—AMERICAN. | |
| 2. Cathedral of St. Patrick, side | 358 | 1. Keystone National Bank | 380 |
| 3. Cathedral of All Saints, façade | 360 | 2. Haseltine Building | 379 |
| 4. Cathedral of All Saints, interior | 360 | ✓ PLATE 66.—AMERICAN. | |
| ✓ PLATE 57.—AMERICAN. | | 1. Berkshire Apartment-house | 395 |
| 1. "New" Old South Church | 362 | 2. Vanderbilt House | 392 |
| 2. Temple Emmanuel | 363 | ✓ PLATE 67.—AMERICAN. | |
| ✓ PLATE 58.—AMERICAN. | | 1. Stanford and Hopkins Houses | 393 |
| 1. Trinity Church, Boston | 362 | 2. "Ingeborg," Overbrook, | 390 |
| 2. National Capitol | 346, 363 | ✓ PLATE 68.—AMERICAN. | |
| ✓ PLATE 59.—AMERICAN. | | 1. Coleman House, Newport | 387 |
| 1. Parliament Houses, Ottawa | 364 | 2. Seaside House, Monmouth Beach | 390 |
| 2. State Capitol, Albany | 366 | ✓ PLATE 69.—AMERICAN. | |
| ✓ PLATE 60.—AMERICAN. | | 1. Ponce de Leon Hotel | 398 |
| 1. State Capitol, Hartford | 366 | 2. Alcazar | 398 |
| 2. Independence Hall, Philadelphia | 345 | | |
| 3. State-House, Boston | 346 | | |

INDEX OF ARCHITECTS, PAINTERS, AND SCULPTORS.

The figures immediately following the name refer to the pages of the text; those at the end of the line indicate birth and death. When only date of birth is given, the artist is still living. Preceding a date, c. indicates about; fl., flourished; e., early; m., middle; c., close.

- | | | | |
|---|----------------------|--------------------------------------|--------------------|
| Adam, James, 306. | Died 1794. | Brosse, Jacques de, 271. | Died 1626. |
| " Robert, 306. | 1728-1792. | Brunelleschi, Filippo, 237-239. | 1377-1444. |
| Adler, Friederich, 294. | Born 1827. | Bryaxis, 71. | m.4th cent. B.C. |
| Agnolo, Baccio d', 245, 246. | 1460-1543. | Bülau, 303. | contemporary. |
| " Domenico d', 247. | fl.e.16th cent. | Bullant, Jean, 256. | c.1520-1578. |
| " Gabriele d', 243. | Died 1510. | Bullhinch, Charles, 346. | 1763-1844. |
| Alberti, Leon Battista, 239, 240. | 1404-1472. | Buonarroti. See MICHELANGELO. | |
| Alessi, Galeazzo, 247. | 1512-1572. | Buontalenti, Bernardo (delle Giran- | |
| Alfon. See JUAN. | | dole, 248, 330. | 1536-1608. |
| Algardi, Alessandro, 274. | 1598-1654. | Burges, James, 315. | Born 1832. |
| Aloisio, 145. | fl.e.16th cent. | Burgkmair, Hans, 259. | 1473-1531. |
| Amel, Jean, 219. | fl.e.15th cent. | Büring, 283. | fl.m.18th cent. |
| Ammanati, Bartolommeo, 239, 247, 272. | 1511-1592. | Bürklein, Friederich, 291, 297, 298. | 1813-1872. |
| Androuet. See DU CERCEAU. | | Butterfield, William, 308, 312, 314. | Born 1814. |
| Anthemios of Tralles, 104. | Died 534 B.C. | | |
| Antimachides, 67. | fl.c.6th cent. B.C. | Cambio. See ARNOLFO. | |
| Antistates, 67. | fl.555 B.C. | Campbell, Colin, 277. | Died 1729. |
| Antonio di Vicenza, 233. | fl.c.15th cent. | Campen, Jacob van, 272. | Died 1638. |
| Apollodoros, 85, 86. | 60-103. | Castañeda, Alonzo Perez de, 336. | fl.c.16th cent. |
| Arler von Gmünd, Peter, 217-220, 224. | 1333-1400. | Cecco, Nicolò di, 232. | fl.m.14th cent. |
| " Heinrich, 232. | fl.c.14th cent. | Cellini, Benvenuto, 251. | 1500-1569. |
| Armstead, Henry Hugh, 315. | Born 1828. | Chalgrin, Jean François Thérèse, | |
| Arnolfo di Cambio (or di Colle), 232, | | 279, 287. | 1739-1811. |
| 234, 238, 330. | 1232-1310. | Chambers, Sir William, 277, 306. | 1726-1796. |
| | | Chiaveri, Gaetano, 279. | fl.m.18th cent. |
| Badajóz, Juan de, 251. | 1512; d. after 1545. | Churriguera, Josef de, 335. | 1650-1725. |
| Bähr, George, 279. | fl.e.18th cent. | Cione. See ORCAGNA. | |
| Barry, Sir Charles, 302, 307, 312, 317. | 1795-1860. | Contucci. See SANSEVINO. | |
| " Edward, Middleton, 288, 316, | | Cormont, Thomas de, 190. | fl.e.13th cent. |
| 317, 321. | 1830-1880. | Cossutius, 76. | fl.200; d.175 B.C. |
| Bartolommeo, Fra, 260. | 1475-1517. | Coucy, Robert de, 190. | Died 1315. |
| Bastiano. See SERLIO. | | Covarrubias, Alonso de, 250, 251. | fl.m.16th cent. |
| Beckett, Sir Edmund (Lord | | Cronaca, Simone del (Il Pallai- | |
| Grimthorpe), 313. | Born 1816. | olo), 241. | 1454-1509. |
| Beer, Georg, 266. | fl.c.16th cent. | | |
| Benedict von Lann, 220, 258. | fl.e.16th cent. | Daphnis of Miletos, 70. | fl.500 B.C. |
| Bergamasco, Guglielmo, 244. | fl.e.16th cent. | Deane, Sir Thomas, 314. | 1792-1871. |
| Bernini, Giov. Lorenzo, 273, 275. | 1598-1680. | Deinokrates, 73, 74. | fl.300 B.C. |
| Berretini of Cortona, Pietro, 274. | 1596-1669. | Del Moro, 330. | contemporary. |
| Beyaert, 329. | contemporary. | Delorme. See L'ORME. | |
| Bibbiena. See GALLI. | | Demmler, Georg Adolf, 303. | 1804-1886. |
| Blouet, Guillaume Abel, 287. | 1795-1853. | Denzinger, Franz Joseph, 303. | Born 1821. |
| Boccardo, Domenico, 254. | fl.c.16th cent. | Diaper, Frederick, 386. | contemporary. |
| Böckmann, Wilhelm, 300. | contemporary. | Dolcebuono, Giacomo, 243. | fl.e.16th cent. |
| Bodley, George Frederick, 317. | contemporary. | Domenichino. See ZAMPIERI. | |
| Borgognone, Ambrogio (Fossano), 240. | c.1455-1523. | Dosio, Giov. Antonio, 247. | 1533-1600. |
| Borromini, Francesco, 274, 280. | 1599-1667. | Du Cerceau, Baptiste, 256. | fl.c.16th cent. |
| Bramante d'Urbino. See LAZZARI. | | " Jacques Androuet, 256. | Died 1614. |
| Bregno, Antonio, 241. | fl.c.15th cent. | Duquesnoy, François (Fiamingo), 271. | 1594-1646. |
| Briosco. See RICCIO. | | Durand, Jean Nicolas Louis, 287. | 1760-1834. |
| Britton, John, 308. | 1771-1857. | Dürer, Albrecht, 258. | 1471-1528. |

- Egas, Enrique de, 250.
 Eginhard, 110.
 Egle, Joseph von, 299, 303.
 Eichlitz, Leopold, 366.
 Eisenlohr, Jacob Friederich, 291, 292, 295, 305.
 Elmes, James, 306.
 Emerson, William, 313.
 Ende, Herman, 300.
 Erwin von Steinbach, 216.
- Fabris, Emilio de, 330.
 Falconetto, Giov. Maria, 245.
 Fansaga, Cosima, 274.
 Fedeli, Francesco, 243.
 Ferstel, Heinrich von, 296, 299, 303.
 Fiamingo. See DUQUESNOY.
 Filarete, Antonio Averulino, 240.
 Fioravanti, Bartolommeo Ridolfo, 144.
 Firduz, 107.
 Fischer, Joseph Emanuel, 277.
 " von Erlach, Johann Bernhard, 276, 277, 293.
 Flattich, Dr. W., 300.
 Foley, John Henry, 315.
 Fontaine, Pierre François Léonard, 287.
 Fontana, Carlo, 275.
 " Domenico, 271.
 Formontone, 243.
 Förster, Ludwig, 295, 304.
 " Emil, 300.
 Fossano, Ambrogio da. See BORGOGNONE.
 François, Gratien, 254.
 Fuga, Ferdinando, 278.
- Gabriel, Jacques Ange, 283.
 Gaddi, Agnolo, 235.
 Gadier, Pierre, 254.
 Galilei, Alessandro, 278.
 Galli da Bibbiena, Carlo, 282.
 " Fernando, 278.
 " " Francesco, 278, 282.
 " " Guiseppe, 282.
- Gambriil, 370.
 Garner, T., 317.
 Garnier, Jean Louis Charles, 325, 326.
 Gärtner, Friedrich von, 290, 291, 293.
 Gau, Franz Christian, 301.
 Gibbs, James, 306.
 Gibson, 346.
 Giocondo, Fra Giovanni, 243.
 Giorgio, Francesco di, 240.
 Giotto di Bordone, 232, 330.
 Giovanni da Padua, 269.
 Girandole. See BUONTALENTI.
 Gnauth, Gustav Adolf, 299.
 Godwin, George, 322.
 Goldmann, Nikolaus, 278.
 Gontard, Karl von, 283.
 Grimthorpe. See BECKETT.
 Guarini of Modena, Camillo, 273.
 Guccio, Agostina Fiorantino di, 240.
- Haase, Conrad Wilhelm, 295, 303.
 Hadfield, George, 346.
 Hallet, Stephen L., 346.
 Hansen, Theophilus, 295, 296, 299.
 Hanus, Master, 220.
 Hardwick, Philip, 306.
 Harrison, Peter, 345.
 Hasenauer, Karl, 300.
- f.c.15th cent.
 770-844.
 Born 1818.
 contemporary.
 1805-1854.
 1782-1862.
 contemporary.
 Born, 1830.
 1240-1318.
 Died 1883.
 1458-1534.
 1591-1678.
 f.c.15th cent.
 Born 1828.
 1410-1469.
 f.m.15th cent.
 6th cent. B.C.
 1695-1742.
 1656-1723.
 contemporary.
 1818-1875.
 c.1762-1853.
 1634-1714.
 1543-1607.
 f.c.16th cent.
 1797-1863.
 Born 1839.
 f.m.16th cent.
 1699-1780.
 1709-1782.
 1326-1396.
 Died 1531.
 1691-1737.
 f.m.18th cent.
 1657-1745.
 1656-1729.
 1696-1756.
 contemporary.
 contemporary.
 1825-1886.
 1792-1847.
 1790-1853.
 1683-1754.
 18th cent.
 1435-1515.
 1423-1491.
 1276-1336.
 f.m.16th cent.
 Born 1840.
 1815-1888.
 1623-1665.
 1738-1802.
 1624-1683.
 f.c.15th cent.
 Born 1818.
 18th cent.
 18th cent.
 Born 1813.
 f.c.15th cent.
 1702-1870.
- Hauberisser, Georg Joseph, 304.
 Have, Theodore, 269.
 Hawksmoore, Nicholas, 305.
 Heideloff, C. A. von, 292.
 Hermogenes of Alabanda, 71.
 Herrera, Juan de, 251.
 Heyden, Adolf, 300.
 Hiber of Augsburg, Hans, 260.
 Hildebrand. See LUCAS.
 Hitzig, Friederich, 294.
 Hoban, James, 346.
 Holbein the Younger, Hans, 259, 260.
 Holt, Thomas, 269 n.
 Holzschuher, Eucharius, 272.
 Hübsch, Heinrich, 290-292, 296, 297.
 Hültz, John, 216.
- Ibara, Cav. Abate Filippo (Juvara), 250, 278.
 Iktinos, 68-70.
 Il Pallaiolo. See CRONACA.
 Isidoros of Miletos, 104.
 " the Younger, 105.
- Jacob (Jacobus de Merania), 231.
 Jacopo of Polo, Fra, 231.
 Johann von Gratz, 232.
 Jones, Inigo, 272, 352.
 Juan of Toledo (Alfon), 251.
 " Cologne, 229 n.,
 Juste, Jean, 253.
 Juvara. See IBARA.
- Kallaischros, 67.
 Kallikrates, 68.
 Kent, William, 277.
 Kimon, 68.
 Klenze, Leo von, 289, 290, 293, 298.
 Knobelsdorff, Hans Georg Wenceslaus von, 283.
 Knoblauch, Eduard, 294, 304.
 Kranner, Joseph, 303.
 Kreuter, 291.
 Kyllmann, Walter, 300.
- Laing, David, 306.
 Lange, Ludwig, 291, 299.
 Langhans, Carl Ferdinand, 294.
 " J. G., 284.
 Langley, Thomas Batty, 306.
 Lassaulx, Jean Claude de, 290.
 Lassus, Jean Baptiste Antoine, 301.
 Laurano, Luciano, 240.
 Lazzari, Donato (Bramante), 241-244, 246, 364.
 Leeming, 317.
 Lefevre, 360.
 Leins, Christian Friederich von, 299, 303.
 Lemercier, Jacques, 274, 275.
 Leochares, 71.
 Lepère, Jean Baptiste, 287.
 Lescot, Pierre, 255.
 Leveau, François Louis (Levau), 275.
 Libon, 70.
 Ligorio, Pirro, 247.
 Lippi, Annibale, 247, 249.
 Lombardo, Moro, 241.
 " Pietro, 241.
 Longhena, Baldassare, 274.
 L'Orme, Philibert de (De-l'orme), 255,
 Richard, 300.
- Born 1841.
 f.c.16th cent.
 1666-1736.
 contemporary.
 4th cent. B.C.
 f.c.1570-1597.
 Born 1838.
 f.m.16th cent.
 1811-1881.
 18th cent.
 1498-1543.
 17th cent.
 f.c.17th cent.
 1795-1863.
 f.m.15th cent.
 1685-1735.
 f.450 B.C.
 6th cent.
 m.6th cent.
 f.c.13th cent.
 f.c.14th cent.
 f.c.14th cent.
 1573-1651.
 Died 1567.
 f.m.15th cent.
 Died 1534.
 6th cent. B.C.
 f. 450 B.C.
 1685-1748.
 6th cent. B.C.
 1784-1864.
 1697-1753.
 1801-1865.
 1801-1871.
 contemporary.
 Born 1837.
 contemporary.
 1808-1868.
 1781-1869.
 1733-1808.
 Died 1751.
 1781-1848.
 1807-1857.
 f.c.15th cent.
 1444-1514.
 contemporary.
 contemporary.
 Born 1814.
 c.1585-1660.
 f.c.370-338 B.C.
 1761-1844.
 1510-1571.
 1612-1670.
 5th cent. B.C.
 1493-1573.
 f.m.16th cent.
 f.c.15th cent.
 c.1445-1529.
 1602-1682.
 1518-1570.
 1829-1877.

- Lucas von Hildebrand, Johann, 277. fl.c.17th cent.
 Lugano, Sebastiano da, 241. 1485-1547.
 Lurago, Rocco (Luraghi), 271. Died 1590.
 Luzarches, Robert de, 190. fl.m.13th cent.
- Machuca, Pedro, 250. fl.m.16th cent.
 Maderno, Carlo, 246, 271. 1556-1639.
 Majano, Benedetto da, 241. 1442-1498.
 " Giuliano da, 238, 241. 1387-1437.
 Malvito of Como, Tommaso, 243. fl.e.16th cent.
 Mansard, François, 273. 1598-1662.
 " Jules Hardouin, 274. 1645-1708.
 Marchesi, Andrea, 247. fl.e.16th cent.
 Marighello, Francesco, 243. fl.e.16th cent.
 Martino, Pietro di, 239. Died 1470.
 Matthews, Master, 171. fl.c.12th cent.
 Matthias of Arras, 217. 1300-1352.
 Metzger, Eduard, 291. Born 1807.
 Michelangelo, 91, 246, 247, 256, 271, 280. 1475-1564.
 Michelozzi, Michelozzo di, 240. 1391-1472.
 Miglioranzzi, Giuseppe, 276. fl.c.17th cent.
 Mnesikles, 69. 5th cent. B.C.
 Möller, Georg, 288. 1784-1852.
 Montereau, Pierre de, 191. Died 1266.
 Montferrand, Alphonse Ricard de, 288. 1507-1563.
 Montorsoli, Fra Giov. Agnolo, 247. contemporary.
 Morlok, 299. 1822-1849.
 Müller, Johann Georg, 295. fl.c.17th cent.
- Nehring, 276. fl.m.16th cent.
 Nepveu, Pierre (Trinqueau), 253. fl.e.14th cent.
 Nese, Cellino di, 232. 1687-1753.
 Neumann, Balthasar, 277, 300. 1811-1887.
 Neureuther, Gottfried, 299. fl.c.17th cent.
- Oldham, F. H., 317. contemporary.
 Oppler, Edwin, 300. Born 1831.
 Orcagna, Andrea (di Cione), 235, 238. 1329-1368.
 Ottmer, Karl Theodor, 289. 1800-1843.
- Paionios of Ephesos, 66, 70. 6th cent. B.C.
 Palladio, Andrea, 243, 247-249, 251, 256, 271, 272. 1518-1580.
 Pennethorne, Sir James, 307. 1801-1871.
 Pennone, Rocco, 247. fl.m.16th cent.
 Percier, Charles, 287. 1764-1838.
 Perrault, Claude, 275. 1613-1688.
 Persius, Ludwig, 294. 1804-1845.
 Peruzzi, Baldassare, 244-246. 1481-1537.
 Peter of Gmünd. See ARLER.
 " of Prague, 218. fl.c.15th cent.
- Pheidias, 70. 498-432 B.C.
 Pintelli, Baccio, 240. 1430-1498.
 Pippi. See ROMANO.
 Pisano, Giovanni, 231. c.1240-1320.
 Poelaert, Joseph, 327, 328. 1816-1879.
 Polykleitos, 70. fl.432 B.C.
 Ponzio, Flaminio, 271. c.1570-1615.
 Poppo von Stablo, 156. fl.m.11th cent.
 Porinos, 67. 6th cent. B.C.
 Porta, Baccio della. See BARTOLOMMEO.
 " Giov. Giacomo della, 271. 1525-1580.
 Pozzo, Andrea, 278, 280. 1642-1709.
 Primaticcio, Francesco, 251. 1490-1570.
 Pugin, Augustus, 308. 1769-1832.
 " Augustus Welby Northmore, 308, 314. 1812-1852.
 Pytheos, 71. 4th cent. B.C.
- Rano, Diego, 250. fl.m.16th cent.
 Ranzell, Fray Alonzo, 336. fl.m.16th cent.
- Raphael. See SANZIO.
 Raschdorf, Julius, 302. Born 1823.
 Raysek, 220. fl.e.16th cent.
 Revett, Nicholas, 306. 1721-1804.
 Rhoekos of Samos, 66. 6th cent. B.C.
 Riccio, Andrea (Briosco), 245. 1452-1532.
 Richardson, Henry Hobson, 356, 362, 366, 368-370, 375, 384, 385. 1839-1886.
 Rickman, Thomas, 308. 1776-1841.
 Ridinger, Georg, 268. fl.c.16th cent.
 Riemenschneider, Tilman, 260. c.1460-1531.
 Riggenbach, 303. contemporary.
 Righetto, Agostino, 245. fl.e.16th cent.
 Rodari, Tommaso, 243. fl.c.16th cent.
 Romano, Giulio (Pippi), 245, 249, 262. 1492-1546.
 Roritzer, Wolfgang, 260. fl.m.16th cent.
 Rosetti, Biagio, 241, 243. fl.c.15th cent.
 Rössner, Carl, 295. contemporary.
- Sachetti, Giambattista, 278. 1736-1764.
 Sangallo, Antonio di, 244, 245. c.1450-1534.
 " " the Younger, 246. c.1482-1546.
 " Giuliano Giamberti di, 241. 1443-1517.
 Sanmichele, Michele, 244, 366. 1484-1554.
 Sansovino, Andrea (Contucci di Monte), 243, 244, 247, 366. 1460-1529.
 Jacopo (Tatti), 246. 1479-1570.
 Santis, Francesco de, 278. fl.m.17th cent.
 Sanzio, Raffaele (Raphael), 244, 245, 262. 1483-1520.
 Sardi, Guiseppe, 274. Died 1699.
 Scamozzi, Vincenzo, 249. 1552-1616.
 Scarpagnino, Antonio, 244. Died 1558.
 Schadde, 329. contemporary.
 Schendeler, John, 216. fl.e.14th cent.
 Schinkel, Karl Friederich, 289, 292-294. 1781-1841.
 Schlüter, Andreas, 277. 1662-1714.
 Schmidt, Friederich, 302, 304, 329, 330. Born 1825.
 Schweiner, Hans, 259. fl.m.16th cent.
- Scott, Sir George Gilbert, 303, 308, 312, 315, 316. 1811-1878.
 Sebastiano. See LUGANO.
 Semper, Gottfried, 294, 298-300. 1803-1879.
 Serlio, Sebastiano (Bastiano da Bologna), 251. 1475-1552.
 Servandoni, Giovanni Niccolò, 279. 1695-1766.
 Shaw, Richard Norman, 311, 317. Born 1831.
 Siccard of Siccardsburg, August, 295, 299. 1813-1868.
 Siccardsburg. See SICCARD.
 Siloe, Diego de, 250. fl.m.16th cent.
- Skopas, 70, 71. fl.460 B.C.
 Smirke, Sir Robert, 288, 306, 307, 316. 1780-1867.
 Soane, Sir John, 288 n. 1753-1837.
 Soller, 294. contemporary.
 Soufflot, Jacques Germain, 283. 1713-1780.
 Specchi, Alessandro, 278. 18th cent.
 Spintharos, 66. 6th cent. B.C.
 Sprenger, 295. contemporary.
 Stadler, 303. contemporary.
 Statz, Vincent, 302. Born 1819.
 Stella, Paolo della, 261. fl.m.16th cent.
 Stier, Wilhelm, 297. 1799-1856.
 Strack, Johann Heinrich, 294, 303. 1806-1880.
 Street, George Edmund, 308, 312, 314, 329, 330. 1824-1881.
 Stromer, 267. fl.c.16th cent.
 Stuart, James, 306. 1713-1788.
 Stüler, August Friederich, 294, 303. 1800-1865.
 Sykes, Godfrey, 316. Died 1887.

- Tasso, Bernardo, 247.
 Temple, Raimond du, 197.
 Theed, William, 315.
 Theodoros of Samos, 66.
 Thornton, Dr. William, 346.
 Tibaldi, Pellegrino, 249.
 Tiess, Karl, 300.
 Timotheos, 71.
 Tite, Sir William, 306.
 Tolsa, Manuel, 337-339.
 Torrigiani, Pietro, 268.
 Treitsch, Abertin, 264.
 Trinqueau. See NEPVEU.
 Tristani, Alberto, 243.
 " Giambattista, 243.
 Tristano, Bartolommeo, 240.

 Unger, 267.
 Ungewitter, G., 303.
 Upjohn, Richard, 359.

 Valdelvira, Pedro de, 251.
 Valerius of Ostia, 82.
 Valle, Andrea della, 245.
 Vanbrugh, Sir John, 277, 345.
 Van Campen. See CAMPEN.
 Van der Nüll, 295, 299.
 Vanvitelli, Luigi, 279.
 Vasari, Giorgio, 243, 247.
 Velasquez, Antonio, 339.

 1473-1569.
 fl.e.13th cent.
 Born 1804.
 6th cent. B.C.
 Died 1827.
 1527-1598.
 1831-1874.
 fl.352 B.C.
 1802-1873.
 contemporary.
 1472-1522.
 fl.m.16th cent.

 fl.m.16th cent.
 fl.m.16th cent.
 fl.c.15th cent.

 fl.e.17th cent.
 contemporary.
 1802-1878.

 1485-1556.
 1st cent. B.C.
 fl.m.16th cent.
 1666-1726.

 contemporary.
 1700-1773.
 1512-1574.
 1729-1793.

 Vignola, Giacomo Barrozz, 247, 248.
 Vignon, Barthélemy, 287.
 Vinci, Leonardo da, 251.
 Viollet-le-Duc, Eugène Emmanuel,
 301, 303, 312.
 Vischer, Peter, 258, 260.
 Visconti, Gian Galeazzo, 232, 233.
 Vitoni, Ventura, 243.
 Vitruvius, 83.
 Voit, August von, 291.

 Waterhouse, Alfred, 317-319.
 Webb, John, 272.
 Weber, 300.
 Weinbrenner, Friederich, 288.
 Wilkins, William, 306.
 William of England, 199.
 William of Sens, 199.
 Wolf, Adolf, 299, 304.
 Wolsey, Thomas, 309.
 Woodward Benjamin, 314.
 Wren, Sir Christopher, 275, 305,
 346, 352.

 Zampieri, Domenico (Domenich-
 ino), 273.
 Zanth, Carl Ludwig, 288.
 Ziebland, Georg Friederich, 290.
 Zitek, Joseph, 300.
 Zwirner, Ernst Friederich, 293.

 1507-1573.
 1766-1846.
 1452-1519.

 Born 1814.
 1455-1529.
 1347-1402.
 fl.e.16th cent.
 fl.36 B.C.
 1801-1870.

 Born 1830.
 17th cent.
 contemporary.
 1766-1826.
 1778-1839.
 fl.c.12th cent.
 fl.c.12th cent.
 Born 1832.
 1471-1530.
 Died 1861.

 1632-1723.

 1581-1641.
 1796-1857.
 1800-1873.
 Born 1832.
 1802-1861.

INDEX.

- ABACUS, DORIC, 64.
 Abbas II., tomb of, 139.
 Abbāsids, the, 127.
 Abbaye aux Dames, 169
 aux Hommes, 169 (pl. 28).
 Abbey of Buildwas, 170.
 of Cluny, 167, 168, 227 (pl. 37).
 of Essen, 149.
 of Fiesole, 238.
 of Knechtstättin, 160.
 of Melrose, 203.
 of Seligstadt, 110.
 of St. Albans, 170.
 Étienne, 169, 176 (pl. 28).
 Gall, 110.
 Germain des Prés, 191.
 of Ste. Geneviève, Paris, 191.
 Trinité, Caen, 169, 176.
 Waltham, 170.
 Westminster, 202, 268, 305,
 312, 348.
 Abd-el-Malek, caliph, 125.
 Abderrahman, caliph, 127.
 III., caliph, 129.
 Abraham, bishop, 150.
 Abul-Kasem, emir, 129.
 Académie Nationale de Musique,
 Paris, 325 (pl. 53).
 Academy of Architecture, Mu-
 nich, 293, 294.
 Stuttgart, 299.
 of Design, National, N. Y., 373.
 of Fine Arts, Karlsruhe, 296.
 Philadelphia, 372.
 Vienna, 299.
 of Music, Philadelphia, 371.
 royal, Piccadilly, 317.
 at Pesth, 294.
 Açoka, king, 116.
 Acropolis, Athens, 63, 67, 68 (pl.
 6).
 Acroteria, sculptured, 64.
 Adaldag, archbishop, 148
 Adelbert, bishop, 154.
 Adelpia, the, London, 306.
 Admiralty Office, London, 317.
 Ælia Capitolina, 87.
 Age, Elizabethan, 305.
 Agia Theotokos, 113 (pl. 16).
 Sofia, mosque, 142.
 Agrippa, emperor, 112.
 Alaric (Visigoth) 101.
 Albergo del Orso, Rome, 235.
 Albert Hall, royal, London, 315.
 Memorial, London, 315.
 Alberti, works of, 239.
 Albrecht of Brandenburg, 163,
 260, 262.
 Alcazar, the, Seville, 134 (pl. 20).
 St. Augustine, Fla., 400 (pl. 69).
 Toledo, 250.
 Alexandria, city of, 73.
 Alhambra, the, 135, 137, 250.
 Court of the Blessing, 135 (pl.
 21).
 of the Lions, 135 (pls. 19,
 20).
 fountain of the lions, 136 (pls.
 19, 20).
 Hall of Justice, 136.
 Abencerrages, 136 (pl. 19).
 Ambassadors, 135.
 of the "Blessing," 135.
 of the Two Sisters, 136.
 tower of Comares, 135.
 Ali Adil Shah, 142.
 Ali-Kâpi (gate), Ispahan, 139.
 Alkinoos, palace of, 56.
 Alkmaionidæ (priests), 66.
 Alliance Assurance, London, 320.
 Al Mansûr, caliph, 127.
 Altmann, bishop, 159.
 Alyattes, tomb of, 55.
 Amasis, 40.
 Amphissa, gate of, 53 (pl. 4).
 Amphitheatre at Nîmes, 89.
 at Pola, 89.
 at Rome, 84.
 at Thysdrus, 89.
 at Verona, 89.
 revolving, Roman, 80.
 Amurath I., 133.
 Andrei, grand duke, 144.
 Andronikos Kyrrestes, clock of,
 75 (pls. 6, 8).
 Anio Vetus (aqueduct), 60.
 Anne, princess, 143.
 queen, 305.
 Anno, archbishop, 156.
 Anósharván. See *Khosrau I.*
 Ansegus, abbot, 110.
 Anselm, bishop, 163.
 Antinoë (city), 87.
 Antoninus Pius, works of, 88.
 Apartment-house, Beaurivage,
 Chicago, 395.
 Berkshire, N. Y., 394 (pl. 66).
 Boylston, Boston, 395.
 Central Park, N. Y., 394.
 Chelsea, 395.
 Dakota, 395.
 Hotel Cluny, Boston, 395.
 Elliott, Boston, 395.
 Navarro, N. Y., 394.
 Osborne, 395.
 Warren, Boston, 395.
 Apartment-houses, American, 394
 (pl. 66).
 English, 321.
 Aqua Appia (aqueduct), 60
 Tepula (aqueduct), 77.
 Aqueduct at Athens, 87.
 at Segovia, 86 (pl. 9)
 Marcian, Rome, 77.
 near Volci, 80 (pl. 9).
 Aqueducts, Peruvian, ancient, 334.
 Roman, 60, 77.
 date of, 59.
 Arabs, the, 106, 123, 124, 127,
 128.
 Arc de l'Étoile, Paris, 287, 324
 (pl. 49).
 Arch, earliest application, 45.
 Etruscan, 57.
 horseshoe, 126.
 pointed, 174.
 Saracenic, 126.
 Tudor, 204 (pl. 30).
 Arch, triumphal, of Constantine,
 Rome, 86, 93 (pl. 10).
 of Fabius Maximus, 77.
 of Gallienus, Rome, 90.
 of Hadrian, Isaura, 87.
 of Janus, Rome, 93.
 of King Alfonso, Naples, 239.
 of Severus, 89 (pl. 10).
 of Titus, 84, 85.
 of Trajan, Ancona, 85.
 Benevento, 85.
 Rome, 86, 93.
 Tucca, 86.
 of the Sergii, 89.
 at Attura, 89.
 at Burgos, 251.
 at Orange, 88.
 at St. Remy, 85.
 at Thebessa, 89.
 Arches, lancet, 200.
 stiling of, 126.
 triumphal, ancient, 83.
 modern, 287.
 Assyrian, 45.
 Roman, 77, 83, 85, 86, 89, 90,
 92 (pl. 10).
 at Nancy, 279.
 of Janus, 83.
 Architects, American, colonial,
 343.
 American, modern, 352, 357.
 Arabian, in Spain, 137.
 English, 305.
 French, in Spain, 170.
 German, in Russia, 144.
 Greek, in Germany, 152.

- Architects, Mexican, 335.
 Norman, in England, 169.
 Spanish, in Africa, 137.
 theatre, German, 282.
- ARCHITECTURE, AMERICAN, 331-399 (pls. 54-69).
 aboriginal, 331-334 (pl. 54).
 19th century, 347-399 (pls. 54-69).
 modern, characteristics, 348.
 progress, 348.
 new movement, 357.
 present movement, 354.
 revivals of styles, 347-39.
 ANCIENT, 35-94 (pls. 1-12).
 ASIATIC, 42-51 (pl. 3).
 periods of, 50, 51.
 primitive type of, 43.
 Assyrian, 44-46 (pl. 3).
 color in, 93.
 palace, 47.
 Babylonian, 46-48 (pl. 3).
 color in, 93.
 palace, 47.
 BYZANTINE, 110-114 (pls. 15, 16).
 CHINESE, 122 (pl. 18).
 CLASSICAL, 61-93 (pls. 6-12).
 OFFSHOOTS OF, 106-114.
 revival of, modern, 271.
 EARLY CHRISTIAN, 97-106 (pls. 13-16).
 EGYPTIAN, 35-42 (pls. 1, 2).
 character of, 41.
 color in, 93.
 English, in India, 322.
 Etruscan, 57-60 (pl. 5).
 inception of Roman art, 59.
 French, transition to Gothic, 173, 174.
 German (Renaiss.), 17th century, 267.
 GOTHIC, 186-235 (pls. 29-39).
 color in, 284.
 ENGLISH, 198.
 Batty-Langley, 306, 353.
 Victorian, 309.
 characteristics, 203, 204 (pl. 30).
 early, 198.
 first appearance in Spain, 171.
 FRENCH, 186-198, 226 (pls. 20, 31, 37).
 architectural activity, 191.
 development, 187.
 effect of the innovation, 187.
 15th century, 226.
 system in Germany, 207.
 spread of, in Germany, 207.
 GERMAN transition, 181-186.
 fancifulness of forms, 215.
 13th to 16th century, 205-225.
 ITALIAN, 229-235.
 in Sicily, 234.
 SPANISH, 227-229.
 GREEK, 61-75 (pls. 6-8).
 color in, 94 (frontispiece).
 transition from Pelasgic, 61.
 INDIAN, 115-122 (pl. 17).
 Mohammedan, 140.
 Japanese, 311, 350.
- Architecture, Mexican, ancient, 333 (pl. 54).
 Mexican, modern, 335.
 ENGLISH, MODERN, development, 305-323.
 Gothic revival, 308.
 Grecian revival, 306.
 EUROPEAN, MODERN, 287-330 (pls. 48-53).
 FRENCH, MODERN, 323-326 (pls. 49, 50, 53).
 Gothic, revival, 292.
 modern, of Belgium, 326-329 (pl. 53).
 of Holland, 329.
 mediæval tendencies, 289.
 Renaissance, revival, 298.
 restorations, 301.
 Roman revival, 293.
 Romanesque revival, 290.
 "stucco" in, 306, 307.
 Moorish, 134 (pls. 19, 20).
 characteristics of, 136.
 Pelasgian, 52-57 (pl. 4).
 Persian, 48-52 (pl. 3).
 Phœnician, 43, 44.
 color in, 93.
 RENAISSANCE, 236-284 (pls. 40-49).
 ENGLISH, 268-270.
 FRENCH, 251-256 (pls. 44, 45).
 GERMAN, 256-268 (pls. 46, 47).
 decadence of, 265.
 spread of, 260.
 ITALIAN, 236-250 (pls. 40-43).
 inception of, 237.
 Late, 270-284.
 Neo-Grecian, in America, 352.
 Palladian, in America, 352.
 SCANDINAVIAN, 268-270.
 SPANISH, 250.
 ROMAN, 75-93 (pls. 9-12).
 color in, 94.
 period of decline, 90.
 ROMANESQUE, 146-186 (pls. 24-29).
 color in, 284.
 ENGLISH, 169.
 characteristics of, 170.
 FRENCH, 167-169 (pl. 28).
 transition to Gothic, 173-181.
 GERMAN, 147-163 (pls. 24, 25).
 10th century, 147-151.
 11th century, 151-159.
 12th century, 159-163.
 revival under Charlemagne, 109.
 transition to Gothic, 181.
 ITALIAN, 163-167 (pl. 27).
 SPANISH, 170-173.
 RUSSIAN, 143-146 (pl. 23).
 SARACENIC, 123-143 (pls. 19-22).
 SASANIAN, 106.
 characteristics of, 107.
 South American, 340.
- Architecture, United States 17th century, 342.
 18th century, 342-347.
 19th century, 347-399.
 and Canada, 342.
 of Central Syria, 99.
 in Asia Minor and Syria, 133.
 in Sicily under Norman rule, 131.
- ARCHITECTURE, application of color, 93.
 art-principles, 21.
 church, American, 357.
 French, 226.
 Italian, 164, 165, 230.
 colonial, American, 342.
 progress of, 344.
 color in, 32, 93, 94, 284.
 definition of, 19.
 design, ideality, 20.
 form, analogies of, 31.
 an expression of the age, 20.
 standards, 21.
 forms, analysis, 20.
 theory of, 23-34.
 secular, French, 226.
 German, 222.
 styles, decay, 22.
 development, 22.
 tectonics, 20.
 Arnulf, bishop, 153.
 Arsacids, the, 106.
 Arsenal, artillery, Vienna, 295.
 Berlin, 276.
 Dantzig, 267.
 naval, Trieste, 296.
 Vienna-Neustadt, 260.
 Art, Arabic, 7th to 10th century, 124.
 Babylonian, 46.
 beautiful in, 24.
 Brahmanical, 119.
 Buddhist, 116.
 Byzantine, Eastern Empire, 114.
 in Sicily, 114.
 in Venice, 113.
 characteristics in, 24.
 classic, offshoots of, 106-114.
 constructive, laws of, 25.
 order in, 25.
 symmetry in, 26.
 Egyptian, decadence of, 39.
 Etruscan, 75.
 fundamental principles of, 23.
 Grecian, spread of, 80.
 transition of, 72.
 Jain, 120.
 Japanese, 311, 356.
 Mohammedan, in Africa, 128.
 in Egypt, 130.
 in India, 137.
 in Persia, 132.
 in Spain, 127, 134.
 in Syria, 125.
 in Turkey, 127, 142.
 11th to 15th century, 129.
 Hindu, 138.
 Persian, 138.
 Moorish, in Africa, 137.
 of the Franks and other Germanic races, 108.

- Art, Roman, early period, 75.
 inception of, 59
 influence of Egyptian, 86.
 later, characteristics, 78.
 Saracenic in Sicily, 131.
 works of, decorative, 234.
 Art-culture, Etruscan, periods, 58.
 Art-galleries, American, 371.
 Birmingham, 316.
 -institute, Chicago, 372.
 school of, Manchester, 317.
 Artemisia, 88.
 Assurbanipal, 45.
 Assurnazirpal, 45.
 Assyrians, the, 43, 44-46.
 Asylum, insane, Buffalo, 374.
 lunatic, Columbus, Ohio, 374.
 Napa, Cal., 375.
 orphan, Hartford, Conn., 374.
 Asylums, American, 374, 375.
 Athena, statue of, 69.
 temple of, Sunion, 69.
 Athens, architecture of, 68.
 Atreus, treasury of, 55 (pl. 4).
 Atrium, 83.
 Attic column, 65.
 Audley End, 269.
 Augusteum (plaza), 105.
 Augustine Canons, the, 159.
 Augustus the Strong, king, 277.
 Aurelian, works of, 90.
 Ayuntamiento (city-hall), 250,
 339.
 Aztecs, the, 332, 334.
 Az-Zahra, city and palace, 129.
 Azzelin, bishop, 153.

 BAALBEC, RUINS, 90 (pl. 12).
 Babylon, 46, 48.
 remains, 47
 Babylonians, the, 46-48.
 Bank, Columbia, New York, 381.
 Manhattan, 381.
 National, Astor, 381.
 Fourth St., Philadelphia, 379.
 Independence, 380.
 Keystone, 380 (pl. 65).
 of the Republic, 379.
 new, Vienna, 296.
 of England, 288, 320.
 Provident Life and Trust Co.,
 379.
 United, New York, 381.
 Banks, American, 379.
 Banque Nationale, Antwerp, 329.
 Baptistery, S. Giov. Battista, 232.
 S. Giov. in Fonte, 102.
 San Lorenzo, Milan, 101 (pl.
 15).
 St. John, Poitiers, 108.
 Lateran, Rome, 101 (pl. 15).
 Sta. Maria in Cosmedin, 104.
 at Asti, 166.
 at Cremona, 166.
 at Parma, 166.
 at Pisa, 166, 238.
 Barbarossa, Frederick, palace, 184.
 Bardo, archbishop, 155, 157.
 Bargello, Florence, 235.
 Barocco, 262.
 Baroque style, 270.
 Basil the Macedonian, 112.

 Basilica Emilia, 79, 80.
 Fulvia, 77, 79.
 Julia, 80.
 of Peace, Rome, 92 (pl. 11),
 S. Apollinare, 104 (pl. 14).
 S. Bartolommeo in Isola, 110.
 S. Clemente, Rome, 164.
 S. Francesco, Ravenna, 102.
 S. Giorgia a Porta Latina, 106.
 S. Giovanni in Lateran, 164.
 S. Lorenzo fuori le Mura, 105.
 S. Martino ai Monti, Rome, 102.
 S. Nicolò in Carcere, Rome, 110.
 S. Paolo fuori le Mura, 101.
 transept, 164 (pl. 27).
 S. Pietro in Vincoli, Rome, 102.
 SS. Vincenzo ed Anastasio, 164.
 San Crisogono, Rome, 164.
 Lorenzo, Rome, 164.
 St. Boniface, Munich, 290.
 Costanza, Rome, 152.
 John, Constantinople, 102.
 the Evangelist, 102.
 Lateran, 98, 110, 278 (pl.
 14).
 Paul's outside-the-walls, 101.
 Peter in the Vatican, 98.
 Reparatus, 99.
 Sta. Agata, Ravenna, 102.
 Agnese, Rome, 106.
 Maria in Ara Coeli, 110.
 in Cosmedin, 106, 164.
 in Trastevere, 164.
 Maggiore, 101.
 Rotondo, 101.
 Sabina, Rome, 102.
 Opimia, 77.
 Porcia, 77.
 Pudentiana, Rome, 98.
 Sempronia, 77.
 Sessoriana, 97.
 Ulpia, 85, 86.
 at Baqouza, Syria, 105 (pl. 13).
 at Behio, Syria, 105.
 at Bethlehem, 98.
 at Deir Seta, Syria, 105.
 at El-Barah, 100, 105.
 at Fano, 82.
 at Hersfeld, 156.
 at Jerusalem, 98.
 at Kherbet-Hass, 100, 105.
 at Landshut, 222.
 at Nola, 102.
 at Paestum, 71.
 at Pergamum, 92.
 at Qualb-Louzeh, 105 (pl. 13).
 at Ravenna, 102.
 at Strassengel, 218.
 at Sueideh, 100.
 at Tafkha, 100.
 at Tefaced, 99.
 at Torcello, 106.
 at Tourmanin, 105 (pl. 13).
 at Treves, 92.
 at Tyre, 98.
 Basilicas, plan of, 82.
 Roman, 97, 98, 110, 164.
 Syrian, 105 (pl. 13).
 Bas-reliefs, Egyptian, 38.
 Bastille, the, Paris, 226.
 Baths of Agrippa, 82.
 of Caracalla, 89, 152 (pl. 12).

 Baths of Diocletian, 91, 157.
 Battle of Guadalete, 127.
 Belfries, Mexican, 337.
 Belfry at Evreux, 226.
 Benedict XI., pope, tomb, 234.
 XII., pope, 197.
 Beni-Hassan, rock-tombs, 37.
 Benno, bishop, 154.
 Bernhard, bishop, 149.
 Bezzelin, archbp., 153, 154, 157.
 Biblioteca Nacional, Mexico, 339.
 Bishoprics, English, new, 312.
 Bolsa (Exchange), Seville, 251.
 Bourse, Antwerp, 329.
 Brussels, 326.
 Lyons, new, 323.
 Paris, 287.
 (See *Exchanges*.)
 Brick, sun-dried, 50.
 Bridge, Alcantara, 86.
 Prague, 224, 225 (pl. 36).
 Santa Trinità, Florence, 247.
 Westminster, 319.
 Bridges, French, 191.
 Roman, 77, 80.
 Broletto, the, Bergamo, 235.
 Como, 234.
 Monza, 234.
 Bronze, use of, 56.
 Bruce, Robert, king, 203.
 Brunelleschi, works of, 237.
 Bruno, archbishop, 149.
 Buddha's remains, 116.
 Building, American Express Co.,
 Chicago, 384.
 Brown, Philadelphia, 380.
 Bullitt, Philadelphia, 379.
 Cheney, Hartford, 370.
 Drexel, Philadelphia, 380.
 Equitable, New York, 383.
 Forrest, Philadelphia, 380.
 Hazeltine, " 379 (pl. 65).
 Mills, New York, 382 (pl. 66).
 Morse, New York, 382.
 Mortimer, New York, 382.
 Post, New York, 382.
 Potter, New York, 382.
 Pullman, Chicago, 383.
 "Record," Philadelphia, 380.
 Rialto, Baltimore, 383.
 Rookery, the, Chicago, 383.
 Safe Deposit, Baltimore, 383.
 Safety Deposit, Chicago, 383.
 Telephone, New York, 383.
 "Tribune," New York, 382.
 Wood, Philadelphia, 380.
 Buildings, American, classes, 349.
 English, commercial, 320.
 ecclesiastical, 311.
 educational, 317.
 public, 314.
 exhibition, Centennial, 385.
 Hall, Agricultural, 385.
 Horticultural, 385.
 Machinery, 385.
 Memorial, 385.
 Charitable Mechanics' Asso-
 ciation, 385.
 Manufacturers and Mechan-
 ics' Institute, 386.
 Music and Exposition, St.
 Louis, 386 (pl. 62).

- Buildings, Financial, Calcutta, 322.
 Government, U. S., 363.
 of Tenochtitlan, 333.
 of the Incas, 334.
 public, American colonial, 345.
 English, 314.
 Greek, 73.
 Italian, 235.
 Mexican, 339.
 Paris, 323.
 United States, 363.
 secular, Italian, 234.
 State and municipal, U. S., 366.
 Burchard, bishop, 150.
 Bureau Engraving and Printing, Washington, 364.
 Pension, Washington, 364.
 Burkhard I., bishop, 133.
 Býids, dynasty of, 132.
- C. DULIUS, 60.
 Fabius Pictor, 60.
 Caliphs, Fatimite, 128.
 Calles (streets), Mexico, 340.
 Cambyses, king, 40.
 Campanile, Florence, 232 (pl. 38).
 St. Mark's, Venice, 383.
 at Prato, 232.
 Campanili (bell-towers), 166.
 Campo Santo, Pisa, 231, 232.
 Canonical establishment, 148.
 Canopic gate, 73.
 Capital, Doric, 64, 85 (pl. 7).
 Capitals, column, Egyptian, 38, 40 (pls. 1, 2).
 Indian, 116.
 Persian, 49, 50 (pl. 3).
 Capitol, National, Washington, 346, 351, 363, 367 (pl. 58).
 of Rome, 246, 271.
 date of, 59.
 State, Albany, 366 (pl. 59).
 Des Moines, 369.
 Hartford, 366.
 Indianapolis, 369.
 Cappella Colleoni, 241.
 de Pazzi, 238, 240.
 Portinari, 240.
 Caracalla, baths of, 89 (pl. 12).
 Caravansaries, Persia, 139.
 Carcel del Corte, Baeza, 251.
 Carolingians, the, 146, 147.
 Caryatides, 69, 256 (pl. 8).
 Casa Consistorial, Barcelona, 229.
 de Oficios, Seville, 251.
 la Audiencia, 229 (pl. 39).
 Disputacion, 229.
 los Muertos, Salamanca, 250.
 del Corlon, Burgos, 251.
 "di Campionet," 83 (pl. 10).
 Lonja, Barcelona, 229.
 Pesaro, Venice, 330.
 Santa, Loretto, 244.
 Casimir the Great, 221, 224.
 Castle, Adlington, 205.
 Albrechtsburg, Meissn, 225.
 Ambras, Innsbruck, 265.
 Amesbury, England, 273.
 Beddington, 205.
 Belvedere, Vienna, 277 (pl. 47).
 Bramhall, 205.
 Castle, Caprarola, Rome, 247 (pl. 43).
 Caserta, Naples, 279.
 Christianienseborg, 278.
 Eltham, 205.
 Frederiksborg, 269.
 Goseck, Naumburg, 154.
 halls, English, 205 (pl. 37).
 Hampton Court, 205.
 Heidelberg, 263, 267.
 Heiligenberg, 265.
 Hertenfels, Torgau, 261.
 Howard, 277.
 imperial, Prague, 258.
 in the Sulzemark, 153.
 Karlstein, 224.
 Kenilworth, 205.
 Kronborg, 270.
 Longford, 269.
 Nykiöbing, Denmark, 269.
 Nymphenburg, 277.
 Offenbach, Frankfurt, 265.
 of Dresden, 261.
 of Gottesau, 266.
 of Güstrow, 264.
 of Heldburg, 264.
 of Landshut, 263.
 of Jönnisberg, 259.
 of St. Angelo, Rome, 88.
 of Vajda-Hunyad, 225 (pl. 36).
 of the Scaligers, Verona, 234.
 Visconti, Pavia, 234.
 old Schwerin, 264.
 Stuttgart, 264.
 on the Zierenberg, 153.
 Ortenberg, Spital, 261.
 Plassenburg, 265.
 Porzia, Spital, 261.
 Rosenborg, Copenhagen, 269.
 royal, Hsenburg, 153.
 Munich, 298.
 Schleiss, 277.
 Trausnitz, Landshut, 261.
 Trifels in the Palatinate, 184.
 Warwick, 205.
 Windsor, 205.
 at Aschaffenburg, 268.
 at Baden-Baden, 265.
 at Bruchsal, 278.
 at Carlsruhe, 278.
 at Cracow, 259.
 at Iconium, 133.
 at Liegnitz, 261.
 at Mannheim, 278.
 at Neuburg on the Danube, 262.
 at Oels, 265.
 at Potsdam, 283.
 at Rastadt, 278.
 at Schönbrunn, 277.
 at Stuttgart, 283.
 at Treves, 108.
 at Tübingen, 261.
 at Vienna, 300.
 (See *Château, Palazzo*.)
 Castles, English, 205.
 French, 191.
 Italian, 234 (pl. 1).
 Catacombs, Rom.
 Cathedra
- Cathedral, Arequipa, 341.
 Arezzo, 231.
 Asti, 231.
 Astorga, 228.
 Augsburg, 150, 217.
 Autun, 169.
 Aversa, 232.
 Avignon, 169.
 Avila, 228.
 Bamberg, 158, 159, 183 (pl. 25).
 Barcelona, 228, 229.
 Basle, 155, 161.
 Bayeux, 193.
 Beauvais, 192, 193 (pl. 29).
 Berlin, 304.
 Bostra, 103 (pl. 13).
 Bourges, 189.
 Brandenburg, 162, 163.
 Bremen, 154.
 Breslau, 260.
 Brunswick, 162.
 Buenos Ayres, 340.
 Burgos, 227, 228, 251.
 Canterbury, 170, 198, 199, 203, 359.
 Carlsburg, 184.
 Cefalù, 132.
 Châlons, 108.
 Chartres, 359.
 Christchurch, Oxford, 312.
 Clermont, 195.
 Cologne, 149, 161, 192, 209, 210, 214, 293, 302, 359 (pls. 31-33).
 Como, 233, 243.
 Constance, 149, 156.
 Cracow, 218, 260.
 Cuzco, 341.
 Diakovar, 295.
 Durham, 170.
 Eichstätt, 159.
 Ely, 202, 312, 359.
 choir of, 201.
 Empoli, 166.
 Erfurt, 212.
 Exeter, 203.
 Fiesole, 166.
 Florence, 232, 337 (pls. 38, 41).
 façade, 330.
 Frankfurt on the Main, 219.
 Freising, tower of, 150.
 Garden City, New York, 360.
 Genoa, 166.
 Gerona, 228.
 Gloucester, 170, 203.
 Goslar, 154.
 Gran, 288.
 Granada, 250.
 Halberstadt, 150, 154, 211, 220.
 Hamburg, 153.
 first stone in, 153.
 Havelburg, 163.
 Hildesheim, 153, 264.
 Huesca, 229.
 Italian, form of, 165.
 Jaen, 251.
 Kaschau, 218.
 Königsberg, 221.
 Langres, 179.
 Laon, 178 (pl. 29).
 "60.

- Cathedral, Lichfield, 201, 202, 312 (pl. 30).
 Liège, 150.
 Lima, 340.
 Limburg on the Lahn, 183, 207 (pls. 24, 25).
 Limoges, 195.
 Lincoln, 201, 312.
 Linz, 302.
 Lübeck, 221.
 Lucca, 232.
 Lugo, 171.
 Magdeburg, 148, 183, 210 (pl. 31).
 Malaga, 250.
 Manchester, 313.
 Mayence, 155, 157, 160, 161, 183 (pl. 24).
 old, 150.
 Meissen, 211.
 Merida, Mexico, 336.
 Merseburg, 153.
 Metz, 209, 217.
 Mexico, 336.
 Milan, 232, 249 (pl. 38).
 Minden, 148, 154, 210.
 Modena, 166, 243.
 Monreale, 132.
 Montefiascone, 275.
 Münster, 149, 183.
 Naples, 232, 243.
 Narbonne, 195.
 Naumburg, 154, 183.
 Newcastle, 313.
 Norwich, 170.
 Notre Dame, Coutances, 189.
 Dijon, 188.
 Le Mans, 189.
 Ottawa, 361.
 Noyon, 177, 179 (pl. 29).
 of All Saints, 360 (pl. 56).
 La Concepcion, Mexico, 338.
 La Encarnacion, 338.
 Old, Brescia, 106.
 Orvieto, 232, 244 (pl. 38).
 Oviedo, 228.
 Paderborn, 152, 154, 183.
 Padua, 245.
 Palermo, 132, 234.
 Palma, 228.
 Pamplona, 228.
 Parenzo in Istria, 105.
 Paris, 194, 227.
 Parma, 166, 230.
 Pavia, 241.
 Peterborough, 170.
 Piacenza, 166, 230.
 Pienza, 240.
 Pisa, 166 (pl. 27).
 Pozzuoli, 81.
 Prato, 166.
 Puy-en-Vélay, 168.
 Pistoja, 166.
 Poitiers, 206.
 Prague, 217 (pl. 33).
 Prato, 232.
 Puebla, 337, 339.
 Ratisbon, 212, 260, 303 (pl. 31).
 Ravenna, 102.
 restorations, English, 312.
 Rheims, 190, 211 (pl. 29).
 Vol. IV.—28
- Cathedral, Rouen, 189.
 S. Diego, Aguas Calientes, 337.
 Flaviano, 166.
 SS. Peter and Paul, 361.
 San Benito, Valladolid, 229.
 Fermo, Verona, 166.
 Francisco, Querétaro, 338.
 Juan de los Reyes, 229.
 Salamanca, 171, 229.
 Salisbury, 199, 200, 201, 312.
 Salzburg, 159.
 Santa Maria del Fiore, 330.
 Santiago, 341.
 Schwerin, 221.
 Séz, 194, 195.
 Segovia, 229.
 Seville, 228, 250.
 Siena, 231, 238, 245.
 Soest, 154.
 Soissons, 179.
 Speyer, 155, 156, 158, 160, 161 (pls. 24, 25).
 baptistery of, 156.
 St. Albans, 313.
 Augustine, Florida, 337, 344.
 Basil, 145 (pl. 23).
 Étienne, Auxerre, 188.
 George, Cologne, 156.
 Louis, New Orleans, 344.
 Maria del Carmine, 233.
 delle Grazie, Milan, 233.
 Mary, Edinburgh, 312.
 Pablo, Burgos, 228.
 Patrick, 358 (pl. 56).
 Peter, Liverpool, 313.
 Stephen's, Prague, 303.
 Stendal, 221.
 Strasburg, 155, 209, 216 (pl. 32).
 Tarragona, 170.
 Toledo, 227, 228, 250.
 Toul, 210.
 Tours, 192.
 Trau, 166 (pl. 27).
 Trent, 231.
 Treves, 100, 156, 161.
 Troyes, 192.
 Truro, 313.
 Vaison, 108.
 Valencia, 228.
 Valladolid, 251.
 Vassili Blashennoi, 145 (pl. 23).
 Verden, 153.
 Verona, 166 (pl. 27).
 Viterbo, 166.
 Vladimir's, 144, 145.
 Walbeck, 153.
 Wells, 201.
 Winchester, 170, 203.
 Worcester, 199, 312.
 Worms, 150, 155, 160, 161 (pls. 24, 25).
 York, 203, 312 (pl. 30).
 Zamora, 171.
 Zara, 166 (pl. 27).
 Zeitz, old, 154.
 (See *Churches*.)
 Cathedrals, French, 209 (pls. 29–33).
 German, expression of, 165.
 of the 11th Century, 151.
 Cave, Dehr Warra, 119.
- Caves, Brahmanical, 119.
 Buddhist, 117–119.
 Ellora, 119.
 Celestinus, pope, 102.
 Cella, temple, 63, 64.
 Celts, the, 167.
 Cement, Portland, 307.
 Cenotaph at Rome, 85.
 Ceramic art, Etruscan, 60.
 Certosa, Pavia, 233, 240 (pl. 40).
 Cervetri, rock-tombs, 58 (pl. 5).
 Chaitya (temple), 117.
 Chaityas, Ajuntah, 118.
 Chambers, Finsbury, 320.
 Chambre des Comptes, Paris, 227.
 Chapel, abbey, St. Germain des Prés, Paris, 191.
 castle, St. Germain-en-Laye, 192.
 Vincennes, 192.
 Corsini, Rome, 278.
 de los Beneventes, 251.
 Dexter monumental, 362.
 "Holy Place," Damascus, 126.
 Jagellon, Cracow, 260.
 King's, Boston, 345.
 Lady, Salisbury Cathedral, 199 n.
 mortuary, circular, 103.
 of Galla Placidia, 102.
 of Henry VII., 203, 268 (pl. 30).
 of Sainte Chapelle, Paris, 191.
 relics in, 191.
 of St. Bartholomew, Hildesheim, 153.
 Paderborn, 152.
 Gertrude, 159.
 Godehard, Mayence, 161.
 John the Baptist, 148.
 John's College, 312.
 Maurice, 153.
 Nicholas, Cologne, 156.
 Salvator, Vienna, 259.
 Stephen, Ratisbon, 159.
 Wenzel, 218.
 Palatine, 132 (pl. 27).
 royal, Toledo, 250.
 Sistine, Rome, 246.
 at Chagga, 97.
 at Omm-es-Zeitun, 97.
 at Stonyhurst, 314.
 at Treves, 206.
 Chapter-house, Breslau, 261.
 Charlemagne, 109, 146.
 Charles IV., 217–219, 224.
 V., 197, 250, 251, 272, 333.
 VIII. of France, 251.
 of Anjou, 232.
 Château Anet, 255 (pl. 45).
 Blois, 252, 366 (pl. 44).
 Bury, 227, 252 (pl. 44).
 Chambord, 253, 366 (pl. 44).
 Châteaubriant, 253.
 Chenonceaux, 252, 256.
 Clagny, Paris, 274.
 d'Ecouen, 255 (pl. 44).
 de Sully, 198.
 Gaillon, Paris, 252.
 Josselin, Brittany, 227 (pl. 37).
 Madrid, Paris, 254 (pl. 44).
 Maison, St. Germain, 273.
 Meillant, St. Amand, 227.
 Nantouillet, 253 (pl. 44).

- Château of Chantilly, 227.
 of Creil, 227.
 of Fontainebleau, 254.
 of Pierrefonds, 198.
 of Poitiers, 226.
 of Sandifer, 253.
 of Sansac, 254.
 of Verger, 227.
 Rocher de Mésanger, 253.
 St. Germain, 252.
 Louis, Quebec, 364.
 at Azay-le-Rideau, 253.
 at Bénéhart, 253.
 at Grand Trianon, 274.
 at Lude, 253.
 at Marly, 274.
 at Perche, 253.
 at St. Armand, 253.
 at Versailles, 274.
 (See *Castle*, *Palaces*, *Palazzo*.)
 Chiesa Madonna della Pietra
 Santa, Naples, 274.
 Nuova del Gesù, Naples, 274.
 Chihil-Suton (palace), 139.
 Chosroes. See *Ahosrau II*.
 Choultries, 120.
 Choultry, Madura, 121 (pl. 18).
 Christ, sepulchre, site of, 87.
 Chronology, Indian, 115.
 Church and State, 146.
 influence on architectural develop-
 ment in France, 173.
 Church-architecture, Byzantine,
 112, 114.
 English, characteristics, 170
 influence of French, 199.
 French, 168, 236.
 German, 183.
 Italian, 164, 165, 230.
 ideal in, 242.
 modern, 357.
 Russian, 144.
 construction, brick, 220, 221.
 development of, 157.
 French, donations to, 194.
 magnificence of, 273.
 modification in, 194.
 form of, established by Otho,
 150.
 CHURCHES, AMERICAN:
 Brattle Square, Boston, 362.
 Christ Church, Philadelphia,
 346 (pl. 55).
 Collegiate Dutch Reformed,
 New York, 359.
 First Jerusalem, Philada., 361.
 Unitarian, Philadelphia, 361.
 Grace, New York City, 360.
 Holy Communion, Phila., 361.
 Trinity, Brooklyn, 360.
 La Candelaria, Rio Janeiro, 340.
 La Compañía, Mexico, 338.
 La Merced, Cuzco, 340.
 Santiago, 341.
 Memorial, of St. Stephen, 361.
 Mercy, Cuzco, 341.
 Methodist, New York City, 360.
 Mormon Tabernacle, 362.
 Temple, Salt Lake City, 363.
 North, Springfield, Mass., 370.
 Nossa Senhora, Bahia, 340.
 da Gloria, Rio Janeiro, 340.
 Churches, American:
 Nuestra Señora, Loreto, 338.
 de Guadalupe, 338, 339.
 of the Campana, Santiago, 341.
 Jesuits, Cuzco, 340.
 Recoleta, Buenos Ayres,
 340.
 Old South, Boston, 347.
 "New," Boston, 362 (pl. 57).
 Our Lady of Perpetual Help,
 Boston, 362.
 Park Street, Boston, 350.
 Parochial, Lagos, 337.
 Sagrario Metropolitano, 338.
 San Agustín, Santiago, 341.
 Mexico, 339.
 Clemente 344.
 Domingo, Buenos Ayres, 340.
 Francisco, Buenos Ayres, 340.
 Mexico, 338.
 Santiago, 341.
 Tula, 335.
 de Paula, Rio Janeiro, 340.
 Gabriel, Mexico, 344.
 Merced, Buenos Ayres, 340.
 Miguel de Allenda, Mexico,
 339, 340.
 Teresa la Antigua, 339.
 Xaver, Tucson, 344.
 Santa Barbara, Monterey, 344.
 Santo Domingo, Santiago, 341.
 St. Clement, Philadelphia, 361.
 James the Greater, Philadel-
 phia, 361.
 Mark's, Philadelphia, 361.
 Michael, Charleston, 346.
 Paul, New York, 350, 359.
 Thomas, New York, 359.
 Tabernacle, Philadelphia, 361.
 Trinity, Boston, 362, 370 (pl. 58).
 New York City, 359.
 at Chihuahua, 337.
 at Guanajuato, 338.
 CHURCHES, BYZANTINE:
 Agia Theotokos, 113 (pl. 16).
 Agius Pantokrator, 114.
 bishop's, Athens, 114.
 Daphne, Thebes, 114 (pl. 16).
 Katholikon, 114 (pl. 16).
 Martorana, 114 (pl. 16).
 of the Apostles, 113.
 Blessed Virgin, 114.
 Mother of God, 113 (pl. 16).
 S. Giovanni degli Eremiti, 114
 (pl. 16).
 Taxiarchis, 114 (pl. 16).
 SS. Gabriel and Elias, 113.
 St. Bardias, 113.
 Clement, Ancyra, 112.
 Elias, Salonica, Syria, 113.
 Front, Périgueux, 113 (pl. 16).
 John, Athens, 114.
 Mary, Semendria, 114.
 in the Great Convent, 114.
 Nikodemus, Athens, 114.
 Theodorus, Athens, 114.
 Sta. Irene, 112 (pl. 16).
 Sophia, 98, 99, 104, 111, 112,
 206 (pl. 15).
 Trebizond, 114.
 at Cassala, Asia Minor, 112.
 at Kurte-Ardshish, 114 (pl. 21).
 CHURCHES, EARLY CHRISTIAN:
 Christian, first model of, 97.
 of Ezra, Syria, 103 (pl. 13).
 of the Apostles, 103.
 Holy Apostles, 99.
 Cross, Ravenna, 102.
 S. Angelo, Perugia, 103.
 Apollinare Nuova, 103.
 Martino in Carlo Aureo, 103.
 Spirito, Ravenna, 104.
 Stefano Rotondo, 103 (pl.
 15).
 Teodora, Ravenna, 104.
 Vitale, Ravenna, 104 (pl. 15).
 SS. Nazario e Celso, 102.
 Sergius and Bacchus, 104
 (pl. 15).
 St. George, Salonica, 98.
 John the Baptist, 125, 126.
 Simeon Stylites, 103 (pl. 13).
 Sta. Croce in Gerusalemme, 98.
 Fosca, Torcello, 106 (pl. 15).
 at Antioch, 98.
 at Moudejeleia, 103 (pl. 13).
 at Neocesarea, Syria, 98.
 (See *Basilicas*, also *Italian* and
Byzantine Churches.)
 CHURCHES, ENGLISH:
 Abbey, Croyland, 170.
 Malmesbury, 170.
 Melrose, 203.
 All Saints, London, 312.
 Castor, Northamptonshire, 170.
 Christchurch, Newgate, 305.
 St. Albans, London, 312.
 Andrew, Holborn, 305.
 Rugby, 312.
 Augustine, Kilburn, 314.
 Bride, London, 305.
 Cross, Winchester, 312.
 Dunstons-in-the-East, 305.
 George, Bloomsbury, 305.
 James, Piccadilly, 305.
 John, London, 314.
 Mark, Leamington Priors,
 312.
 Martin, Ludgate, 305.
 -in-the-Fields, 306.
 Mary, Aldermary, 305.
 Beverly, 203.
 Oxford, 203.
 -le-Bow, London, 305.
 Nicholas, Newcastle, 313.
 Pancras, London, 288.
 Paul, London, 275 (pl. 48).
 Stephen, Norwich, 203.
 Wallbrook, 305.
 Temple, London, 199.
 Tower of London, 170.
 at Doncaster, 312.
 at Edensor, 312.
 CHURCHES, FRENCH:
 Abbey, Jumièges, 169.
 of St. Denis, Paris, 169.
 George, 169.
 convent, Ainay, Lyons, 169.
 of Cluny, Paris, 168.
 of La Madeleine, 287 (pl. 49).
 of Notre Dame, Châlons, 176.
 Dijon, 180, 106 (pl. 29).
 Paris, 177, 183, 192, 301
 (pl. 29).

Churches, French :

- of Notre Dame d'Auteuil,
Paris, 324.
du Port, Clermont, 168,
175 (pl. 28).
la Grande, Poitiers, 169
(pl. 28).
of the Invalides, 274 (pl. 48).
Jacobin Convent, 193.
Jacobins, Agen, 194.
Toulouse, 194.
Sacred Heart, 324.
Sorbonne, Paris, 274 (pl.
48).
Sainte Chapelle, Paris, 301.
St. Augustin, Paris, 324.
Denis, 192.
Étienne du Mont, 252 (pl.
45).
Eustache, Paris, 254.
Germain des Prés, Paris, 176.
Gilles, Arles, 169.
Joseph, Paris, 324.
Laumer, Blois, 177.
Laurence, Fontanellum, 109.
Martin, Tours, 108.
Michael, Dijon, 253.
Fontanellum, 109.
Nicholas, Caen, 169.
Nicolas, Troyes, 253.
Ouen, Rouen, 197.
Pantaléon, Troyes, 253.
Paul, Fontanellum, 109.
Peter, Caen, 253 (pl. 45).
Fontanellum, 109.
Perpetuus, Tours, 108.
Philibert, Tournus, 168.
Servatius, Fontanellum, 109.
Stephen, Paris, 177.
Sulpice, Paris, 279, 283.
Trophime, 169 (pl. 28).
Vincent, Soignies, 149.
Ste. Clotilde, Paris, 301.
Geneviève, 283 (pl. 48).
at Carcassonne, 169, 196.
at Clermont-Ferrand, 108.
at Conques, 168 (pl. 28).
at Monpezat, 195.
at Poissy, 175.
at Valence, 169.
at Vézelay, 173, 174, 181.
- CHURCHES, GERMAN :
- Abbey, Brauweiler, 155.
Deutz, 155.
Martinsberg, 184.
Werden, 182.
Cistercian, Altenberg, 209.
of St. Michael, Siegburg, 156.
Altlerchenfeld, Vienna, 295.
bishop's, Zeitz, 149.
Catholic, Dresden, 279 (pl. 47).
new, Stuttgart, 303.
Cemetery, Vienna, 296.
Christchurch, Hanover, 303.
Cistercian, Dargun, 221.
Dobberan, 221.
Eberbach, 161 (pl. 24).
Ebrach, 183.
Heiligenkreuz, 175.
Marienstadt, 206.
Riddagshausen, 183.
Zwetl, 217.

Churches, German :

- Collegiate, Aschaffenburg, 262.
Halle, 260.
Mölk, 279.
of Zeitz, 154.
of the Holy Cross, 154.
Moritzburg, 153.
Wimpfen, 210.
Convent, Cistercian, Chorin, 221.
Diesdorf, 163.
Gerresheim, 149.
Hirschau, 157.
Jericho, 163.
Limburg, 155 (pl. 24).
Nienburg, 211.
of St. Burchard, 159.
on the Michaelsberg, 159.
Reinhardtsbrunn, 154.
Conventual, Huyseburg, 154.
Petershausen, 150.
Corpus Christi, 221 (pl. 34).
Dominican, Coblenz, 208.
Constance, 208.
Esslingen, 207.
Ratisbon, 213.
Franciscan, Salzburg, 184.
Fünfhäuser, 304 (pl. 52).
in Abdinghof, Paderborn, 154.
in Au, Munich, 292.
in the Jägerzeile, 295.
in the Sulzeimarsh, 153.
Karolinenthal, Prague, 295.
Liebfrauenkirche, Coblenz, 161.
Halberstadt, 152, 162.
Ludwigskirche, Carlsruhe, 290.
Minorite, Cologne, 208.
Minster, Aix, 109 (pl. 15).
new, Würzburg, 267.
Ratisbon, 212.
Obermünster, Ratisbon, 158.
of Bustorf, Paderborn, 153.
of Great St. Martin, Cologne,
149, 156, 161.
of Maria Stiegen, 219.
of Our Lady, Coblenz, 161.
Dresden, 279 (pl. 47).
Halberstadt, 152, 162.
Ingolstadt, 222.
Munich, 222.
Münster, 217.
Nuremberg, 218.
Treves, 205.
of the Apostles, Cologne, 155,
161, 182 (pls. 24, 25).
Augustines, 161.
Barefooted Friars, 212.
Convent, Fulda, 148.
of the Virgin, 148.
Holy Cross, Breslau, 261.
Gmünd, 218.
Vienna, 162.
Sepulchre, 149.
Jesuits, Cologne, 272.
Maximin Convent, 149.
Monastery, Magdeburg,
148.
of St. Pantaleon, 149.
Nunnery, Kemnade, 153.
Ottmarsheim, 156 (pl.
24).
Premonstratensians, 162.
"Old Parish," Ratisbon, 212.

Churches, German :

- on Mont St. Michael, 192, 206,
on the Harlungerberg, 162.
on the Nonneberg, 159.
parish, Bamberg, 219.
Bozen, 219.
Ratisbon, 260.
Premonstratensian of All Saints,
206.
Protestant, Munich, 293.
SS. Peter and Paul, 219.
St. Afra, Augsburg, 159.
Andrew, Cologne, 182.
Barbara, 219, 220.
Bartholomew, 218.
Blasius, 212.
Cæcilia, Cologne, 149.
Castor, Coblenz, 161.
Catherine, Brandenburg, 221.
Lülbeck, 221.
Oppenheim, 210.
Osnabrück, 217.
Charles, Wieden, 277 (pl. 47).
Claren, Cologne, 109.
Cunibert, Cologne, 156, 182.
Elizabeth, Basle, 303.
Breslau, 261.
Marburg, 207, 208, 210,
211.
Emmeram, Ratisbon, 150, 159.
Florian, Passau, 159.
Genevieve, Andernach, 161.
George, Augsburg, 162.
Nördlingen, 220.
Gereon, Cologne, 156, 161,
182 (pl. 25).
Godehard, Brandenburg, 163.
Hildesheim, 162.
Hedwig, Berlin, 283.
Jacob, Bamberg, 159.
Ratisbon, 159.
Seehausen, 163.
Thorn, 221.
Ják, 184.
John, Constance, 149.
Gmünd, 166.
Niederlahnstein, 161.
Speyer, 156.
Stuttgart, 303.
the Baptist, 147.
Kilian, Heilbronn, 259.
Lambert, Münster, 219.
Lawrence, Constance, 149.
Liège, 149.
Nuremberg, 218, 220 (pl.
31).
Maria in Capito, 156, 157,
182, 260 (pl. 24).
Mark's, Berlin, 294 (pl. 52).
Martin, Landshut, 222.
Liège, 149.
le Grand, Cologne, 182.
Mary, Arnstadt, 212.
Dantzic, 221.
Esslingen, 220.
Heiligenstadt, 212.
Lülbeck, 221.
Mühlhausen, 212.
Osnabruck, 210.
Prenzlau, 221 (pl. 34).
Reutlingen, 209.
Rostock, 221.

Churches, German :

- St. Mary, Salzwedel, 163.
 Stargard, 221.
 Stendal, 221.
 Stralsund, 221.
 Treves, 206.
 Wolfenbüttel, 268.
 Würzburg, 219.
 Zwickau, 220.
 Matthias, Treves, 160.
 Maurice, Cologne, 302.
 Mauritius, Cologne, 160.
 Michael, Berlin, 294.
 Fulda, 110.
 Goseck, 154.
 Hall, 220.
 Hildesheim, 152, 154, 162.
 Munich, 266, 290 (pl. 50).
 Wiener-Neustadt, 184.
 Nicholas, Hamburg, 303.
 Stralsund, 221.
 Wipperfürth, 182.
 Zerbst, 220.
 Nicolas, Brandenburg, 163.
 Gerona, 171.
 Pantaleon, Cologne, 156.
 Paul, Constance, 149.
 Kärnten, 159.
 Liège, 149.
 Worms, 155.
 Peter, Berlin, 294.
 Schönbrunn, 276.
 Quirin, Neuss, 182.
 Remigius, Ingelheim, 161.
 Remy, Rheims, choir, 177.
 Sebald, 183, 207, 219.
 choir, 225.
 Severin, Cologne, 149, 156, 157.
 Stephen, Mayence, 150.
 Tangermünde, 163, 221.
 Vienna, 184, 216 (pl. 32).
 Thomas, 294 (pl. 52).
 Ulrich, Ratisbon, 212.
 Sangerhausen, 154.
 Ursula, Cologne, 156.
 Vincent, Metz, 209.
 Wilibord, Echternach, 155.
 Wipertus, 147, 148.
 Sta. Maria ad Gradus, 156.
 in Capitulo, 156, 157, 182, 260 (pl. 24).
 Votive, Aix-la Chapelle, 302.
 Vienna, 303 (pl. 52).
 Werder, Berlin, 292, 294.
 at Aix-la-Chapelle, 149.
 at Alspirsbach, 161.
 at Altenstadt, 162.
 at Aschaffenburg, 260.
 at Banz, 279.
 at Boppard, 160.
 at Brauweiler, 182.
 at Comburg, 162.
 at Denkendorf, 162.
 at Einsiedeln, 279.
 at Ellwangen, 162.
 at Fital, 217.
 at Faurndau, 162.
 at Freudenstadt, 267.
 at Gandersheim, 162.
 at Gelnhausen, 182 (pl. 25).
 at Gernrode, 151.

Churches, German :

- at Gladbach, 182.
 at Hamersleben, 162.
 at Hecklingen, 162.
 at Heisterbach, 182.
 at Herrenalb, 162.
 at Hersfeld, 156.
 at Hillerodt, 161.
 at Himmerodt, 161.
 at Huyseburg, 162.
 at Ilsenburg, 154.
 at Jever, 265.
 at Kaiserwerth, 182.
 at Klosterrath (Rolduc), 161.
 at Königslutter, 152 (pl. 24).
 at Krewese, 163.
 at Laach, 160.
 at Lann, 220.
 at Lébeny, 184.
 at Lillienfeld, 184.
 at Limburg-on-the-Hardt, 156.
 at Maria-Kulm, 279.
 at Maulbronn, 162 (pl. 26).
 at Michaelstadt, 110.
 at Mittelzell, 156.
 at Murhardt, 162.
 at Nagy-Károly, 184.
 at Niederaltaich, 159.
 at Oldisleben, 154.
 at Ottoheuren, 279.
 at Petershausen, 161.
 at Pirmas, 229.
 at Potsdam, 294.
 at Quedlinburg, 162.
 at Rieux, 188, 211.
 at Schulpforte, 211.
 at Schwarzhendorf, 161.
 at Sindelfingen, 162.
 at Sion, 182.
 at Sponheim, 160.
 at St. Blasien, 279.
 at St. Gallen, 279.
 at St. Gilgen, 162.
 at Tischnowitz, 184.
 at Trebitsch, 184.
 at Tsámbék, 184.
 at Vierzehnheiligen, 279.
 at Waldsassen, 279.
 at Wechselburg, 162.
 at Weingarten, 162, 279.
 at Weissenburg, 209.
 at Werden, 154.

CHURCHES, ITALIAN :

- Convent, Dobrilugk, 163.
 Dominican, Sta Maria Novella, Florence, 232.
 Fontegiusta, Sienna, 243.
 Franciscan, Sta. Croce, 232.
 Grotto, of S. Angelo, 232.
 of Il Gesù, Rome, 248.
 of La Magione, Palermo, 132.
 of Martorana, Palermo, 114.
 of Our Lady of Loreto, Rome, 246.
 of Or San Michele, 232 (pl. 38).
 altar, 234 (pl. 38).
 of the Holy Sepulchre, 153, 199 (pl. 13).
 Madonna dell' Umita, Pistoja, 243.
 della Carceri, 241.
 Catena, 243.

Churches, Italian :

- of the Madonna della, Steccata, 243.
 delle Grazie, 244.
 Nevi, Siena, 243.
 di S. Biagio, 245.
 Campagna, 243.
 Porto Salvo, 243.
 S. Satiro, 243.
 Redeemer, 249 (pl. 40).
 Servi, Siena, 245.
 S. Agostino, Rome, 243.
 Andrea, Mantua, 240.
 Antonio, Padua, 238, 245.
 Benedetto, Ferrara, 243.
 Mantua, 245.
 Bernardino dei Termini, 91.
 Clemente, 110 (pl. 14).
 Cristoforo, Ferrara, 243.
 Domenico, Palermo, 273.
 Donato, Genoa, 166.
 Fantino, Venice, 243.
 Felice, Venice, 243.
 Filippo Neri, Turin, 273.
 Francesco, Ferrara, 243.
 Rimini, 239.
 Giorgio dei Greci, 246.
 Maggiore, Venice, 249.
 Giovanni Battista, Ferrara, 243.
 Modena, 243.
 Crisostomo, Venice, 241.
 dei Fiorentini, Rome, 278.
 Evangelista, Parma, 243.
 Giustina, Padua, 245.
 Ignazio, Rome, 274.
 John, Pergamum, 92.
 Lorenzo, Florence, 238, 246.
 Turin, 273.
 Marcello, Rome, 275.
 Maria Inconronata di Canepanova, Pavia, 242.
 Martino, Lucca, 166.
 Maurizio, Milan, 243.
 Michele, Lucca, 166.
 Pavia, 166.
 a Ripa Grande, Rome, 275.
 Miniato, Florence, 166 (pl. 27).
 Paul's, Rome, 164 (pl. 27).
 Pietro in Cielo d'Oro, 166.
 in Gessate, 240.
 Modena, 243.
 Montorio, 243.
 Prassede, Rome, 110.
 Salvatore, Venice, 243.
 Sepolcro, Piacenza, 243.
 Sisto, Piacenza, 243.
 Spirito, Ferrara, 243.
 Florence, 238.
 Modena, 243.
 Rome, 246.
 Tommaso in Limine, 166.
 Urbano, Rome, 191.
 Zaccaria, Venice, 240 (pl. 10).
 Zeno Maggiore, 166 (pl. 27).
 SS. Giovanni e Paolo, 232, 241.
 Lorenzo e Damaso, 244.
 San Ambrogio, Milan, 166.
 Andrea, Vercelli, 231.
 Antonio, Padua, 231.
 Francesco, Assisi, 231.

Churches, Italian :

- Santa Maria di Costello, 231.
 St. Apollinaris, Remagen, 293.
 Mark, Venice, 113, 164, 231, 238, 245, 246, 290 (pls. 16, 42).
 Peter, Rome, 244-246, 262, 271, 273, 274, 325, 327, 328 (pl. 43).
 Sta. Anastasia, Verona, 232.
 Annunziata, Florence, 240.
 Naples, 279.
 Catarina, Sienna, 243.
 Maria, d'Arbono, 232.
 da Carignano, 247.
 di Loreto, Rome, 246.
 in Cosmedin, 104.
 Miracoli, Brescia, 243.
 Venice, 241.
 dei Frari, Venice, 231.
 degli Angeli, Palermo, 234.
 Rome, 91, 246.
 del Carmine, Padua, 243.
 Popolo, Rome, 243.
 dell' Anima, Rome, 244.
 della Croce, Crema, 242.
 Minerva, 81.
 Grazie, 241 (pl. 42).
 Pace, Montorio, 243.
 Salute, Venice, 274 (pl. 40).
 in Toscanella, 166.
 in Trastevere, 275.
 in Vado, Ferrara, 240.
 in Via Lata, Rome, 274.
 Maggiore, Naples, 278.
 Novella, Florence, 240.
 presso S. Celso, Milan, 243.
 Zobenigo, Venice, 274.
 Martina, Rome, 275.
 Trinita, Florence, 231.
 at Casale-Monferrato, 166.
 at Gravedona, 166.
 at Navarra, 166.
 at Paray-le-Monial, 169 (pl. 28).
- CHURCHES, RUSSIAN :
 Abbey at Lavra, 144.
 of the Annunciation, 145.
 Archangel Michael, 145.
 Assumption, 144.
 Beheading of St. John the Baptist, Jakovo, 145.
 Sudal convent, 144.
 Santa Maria, Novgorod, 143.
 Sophia, Chernigov, 143.
 Constantinople, 144.
 Kiev, 143.
 St. Catherine, Cracow, 221.
 Isaac, 288 (pl. 49).
 Mary, Cracow, 221.
 Kiev, 143.
- CHURCHES, SPANISH :
 Cartusa, Miraflores, 229.
 Cistercian, Casamara, 232.
 of Las Huelgas, 227.
 Collegiate, Osuna, 250.
 of El Paral, Segovia, 229.
 S. Esteban, Segovia, 171.
 Isidoro, Leon, 171.
 Martin, Segovia, 171.
 Millan, Segovia, 171.
 Pablo del Campo, 171.

Churches, Spanish :

- S. Pedro, Huesca, 171.
 de las Galligans, 171.
 Puellas, 171.
 Petronio, Bologna, 233.
 Santa Maria del Mar, 228.
 la Blanca, 134.
 St. Giles, Burgos, 228.
 Julien, Brioud, 175.
 Just y Pastor, Barcelona, 228.
 Sernin, Toulouse, 171.
 Sta. Maria del Pino, 228.
 at Batalha, 227, 229.
 at Belem, 229.
 at Elne, 171.
 at Manresa, 228.
- Churches, brick, German, 221.
 Christian, early, 97.
 first model of, 97.
 used by Mohammedans, 125, 127.
 circular, 102.
 colonial, American, 346.
 Constantine's, 97, 98.
 convent, 109.
 domical, 98, 111.
 Dominican, 207, 208.
 English, 203, 305, 311.
 French, 226.
 modern, 324.
 Franciscan, 207.
 Friars', 193.
 German, 13th Century, 210.
 in the Kremlin, Moscow, 145.
 of North Africa, 199.
 of the 4th Century, 100.
 5th Century, 102.
 on the Gensdarmenmarkt, 283.
 palace, 205.
 Russian, 145 (pl. 23).
 Syrian, 103.
 at Qunawât, 100.
 wooden, German, 148.
 "Churrigueresco," 335.
- Circus of Maxentius, 92.
 Maximus, 80.
 first, 59.
 Nero's, 98.
- Cistercians, the, 173.
 Citadel of Babylon, 42.
 of Granada, 135.
 (See *Acropolis*.)
- Cities, American, 390-393.
 French, 13th Century, 191.
 15th Century, 226.
 German, 14th Century, 224.
 Mohammedan, 129.
 Roman, 83.
 Syrian, 100.
- City of Nancy, 279.
 of Washington, D. C., 394.
- City-hall, Albany, 368.
 Baltimore, 368.
 Boston, 368.
 Chicago, 369.
 Mexico, 339.
 "Old Granary," Newport, 345.
 New York, 350, 367.
 Philadelphia, new, 367 (pl. 61).
 old, 345 (pl. 60).
 San Francisco, new, 369.
 Seville, 250.

City-houses, Baltimore, 391.

- Boston, 393.
 Chicago, 393.
 New York, 391, 392.
 Philadelphia, 390, 391.
 San Francisco, 393.
 St. Louis, 392.
 Washington, D. C., 394.
- Civilization, Roman, spread, 108.
 Russian, 143.
- Civita Castellana, 245.
 Clement VII., 197, 244, 245.
 "Cleopatra's Needle," 39 n.
- Clepsydra, 75.
 Cloaca Maxima, 59.
- Cloister, at Elne, 191.
 at Fontfroid, 191.
 at Heiligenkreuz, 184.
 at Klosterneuburg, 184, 213.
 at Langres, 191.
 at Laon, 191.
 at Noyon, 191.
 at Rouen, 191.
 at S. Miguel de los Reyes, 251.
 at Sémur-en-Auxois, 191.
 at Soissons, 191.
 at St. Jean des Vignes, 191.
 at St. Lizier, 191.
 at Toul, 191.
 at Zwettl, 184.
 of S. Ziol, Carrion, 251.
 of the Abbey of Mont St. Michel, 197.
 Cathedral, Bordeaux, 197.
- Cloisters, German, 183.
 (See *Convents*.)
- Cloth-hall at Bruges, 223.
 of Cracow, 224.
 of Ypres, 223.
- Club-houses, American, 373.
 English, 318.
- Club-house, Carlton, London, 307.
 city Liberal, Walbrook, 319.
 Conservative, London, 319.
 Liberal, Birmingham, 319.
 London, 319.
 Reform, London, 307.
 Travellers', London, 307.
 Union League, N. Y., 373.
 Philadelphia, 373.
- Coatepantli, 333.
- Colegio S. Nicolas, Burgos, 251.
- Coliseum, the, 84 (pl. 10).
- College, Caius, 268, 317.
 Clare, Oxford, 270.
 Columbia, New York, 376.
 Girard, Philadelphia, 376.
 Harvard, 370, 375.
 memorial hall, 375.
 Sever Hall, 370, 375.
 Jesuit, Bahia, 340.
 Keble, Oxford, 314.
 Maglalen, Oxford, 317.
 of Mölk, 159.
 Princeton, N. J., 375.
 St. John's, Oxford, 270.
 Peter's, Cambridge, 270.
 Trinity, Cambridge, 269.
 University, London, 306.
 Wellesley, 375.
 Yale, 375.
 at Dulwich, 316.

- College, at Gonville, 317.
 at Stonyhurst, 314.
 Collegiate Institute of St. Peter,
 Mayence, 149.
 Collegio Mayor, Salamanca, 250.
 S. Gregorio, Valladolid, 250.
 Sta. Cruz, Valladolid, 250.
 Collegium Saxonicum, Erfurt, 263.
 Colonial Offices, London, 316.
 Color in Architecture, 32, 93, 284.
 Column-base and cornice, Roman-
 esque, 185 (pl. 26).
 Column, Alex. Severus, 89.
 Memorial, Antoninus Pius, 88.
 Marcus Aurelius, 88 (pl. 11).
 of Trajan, 86 (pl. 11).
 Vendôme, 287 (pl. 49).
 Columna rostrata, 60.
 Columns, Attic, 65.
 Doric, 64, 65 (pl. 7).
 Egyptian, 38 (pls. 1, 2).
 Ionic, 65.
 Pelasgian, 55 (pl. 4).
 Persian, 49 (pl. 3).
 sitting, 278.
 triumphal, 85, 88, 89, 116.
 Commandantur, 295 (pl. 52).
 Communists, 287.
 Compluvium, 83.
 Conrad II., emperor, 155.
 Constantine, 98-100.
 Arch of, Rome, 93.
 Constantinople, 111.
 Construction, 28.
 brick, German, 220.
 and terra-cotta, U. S., 354.
 church, anti-Christian, 273.
 German, new elements, 151.
 details of, 29.
 durability, 28.
 French, development, 173.
 geometrical, 27.
 iron and stone, U. S., 355.
 materials of, 27.
 colonial period, U. S., 342.
 mill-, in America, 355.
 palace, Assyrian, 45.
 German, 263.
 stone, Greek, 63.
 Syrian, 100.
 temple, Greek, 63.
 timber, in America, 355.
 English Gothic, 203 (pl. 30).
 Greek, 62, 65.
 vaulted, early Christian, 99.
 German, 162.
 Greek, 73.
 Roman, 76.
 vernacular, American, 351.
 Convent, Ainay, Lyons, 169.
 castle, Goseck, 154.
 church, Laach, 160.
 Limburg, 155 (pl. 24).
 Maximin, Treves, 149.
 of St. Burchard, 159.
 Reinhardtsbrunn, 154.
 Susdal, 144.
 Hirschau, 157.
 Landau, Nuremberg, 258.
 Neumünster, Würzburg, 158.
 Neuwerk, Goslar, 162.
 of Fontanellum, 109.
 Convent, of Haug, 158.
 of Lorenzo Maggiore, 232.
 of Luziana, 250.
 of the Jacobins, Paris, 193.
 of the Virgin, 148.
 on Mont St. Michael, 192.
 on Mount Huy, 153.
 on the Michaelsberg, 159.
 S. Lorenzo of the Escorial, 251.
 Marco, Leon, 251.
 St. Servatius, 147.
 Stephen, Würzburg, 158.
 Walburg, 159.
 Sta. Croce, Florence, 238.
 Trinità, Vinosa, 232.
 at Arendsee, 163.
 at Bogolinbov, 144.
 at Fulda, 148.
 at Gerbstadt, 149.
 at Gerresheim, 149.
 at Gladbach, 149.
 at Göttheith, 159.
 at Gurk, 159.
 at Hadmersleben, 149.
 at Himmerodt, 161.
 at Iburg, 154.
 at Jericho, 163.
 at Laach, 160.
 at Liège, 150.
 at Lorsch, 110.
 at Mafra, 278.
 at Maulbronn, 184 (pl. 26).
 at Mölk, 279.
 Convents, French, 191.
 (See *Cloisters*.)
 Conventual structures, Indian, 117.
 Corinth, old temple, 63.
 Corinthian order, 72.
 first appearance, 70.
 Corte della Sapienza, Rome, 271.
 Cosmati (artists), 164.
 Cottages, seaside, American, 390.
 French, 326.
 Council-house, Birmingham, 316.
 Court-house, Allegheny, Pa., 368.
 Jefferson Market, N. Y., 368.
 New York City, 367.
 Springfield, Mass., 370.
 Court of Chancery, Vienna, 277.
 Courts, Fort Police, Bombay, 322.
 Cozbert, Albert, 150.
 Crescentius, emperor, 164.
 Cromlechs, 331.
 Crusades, the, 172.
 Crypts, relic-receptacles, 165.
 Cucumella (tomb), 58.
 Cult, Brahmanical, 116.
 fire-worshipping, 106.
 of Buddha, 116.
 Culture, art-, Etruscan, 58, 59.
 Chaldean, 42.
 Egyptian, 37, 40.
 culmination, 38.
 Pelasgian, date, 56, 57.
 Cupolas, Assyrian, 45.
 Custom-house, Boston, 364.
 Chicago, 364.
 Liverpool, 306.
 London, 306.
 New York, 364.
 Philadelphia, 364.
 St. John's, N. B., 365.
 "Cyclopean" walls, 52.
 Cyna, 64.
 Cyrus, 48.
 palace of, 48.
 tomb of, 48 (pl. 3).
 DARIUS, KING, 48.
 tomb of, 48 (pl. 3).
 David II., king, 203.
 Decoration, Japanese, 311, 356.
 mural, 284.
 Mohammedan, 142.
 palace, Etruscan, 56.
 Pelasgian, 55 (pl. 4).
 wall, Assyrian, 45.
 Babylonian, 47.
 Egyptian, 38.
 Persian, 50.
 Phœnician, 43.
 polychromatic, 165.
 Demetrius, 66.
 Phalereus, 70.
 Destruction of Cologne, 161.
 Dhagobas, 116.
 Diana of Poitiers, 255.
 Diocletian's baths, 91, 103.
 palace, 91, 103.
 Dipteral temples, 64.
 "Divine Book," 332.
 Dome, the, 238.
 Dominicans, the, 213.
 Don Pedro the Cruel, 134.
 Dooshtagamani, 117.
 Dorians, the, 61.
 Doric order, 64, 65 (pl. 7).
 temple, origin, 65.
 temples, Greek, 63, 65 (pls. 6, 7).
 Duomo, Florence, architect, 234.
 façade, 330. (See *Cathedral*.)
 Dwelling-houses, colonial Amer-
 ican, 342, 345, 387.
 American, 19th Century, 386.
 city, 390.
 country, 389.
 English, 322.
 French, 191.
 German, 184, 223, 225, 281
 (pls. 26, 34).
 Mexican, 340.
 Parisian, 326.
 Roman, 83 (pl. 10).
 South American, 341.
 Syrian, 100.
 Dwellings Company, Industrial,
 London, 321.
 Dynasties, Egyptian, 37.
 ECHINUS, DORIC, 64.
 École des Beaux-Arts, Marseilles,
 326.
 Paris, 252 (pl. 37).
 Editha, wife of Atho, 148.
 Edward II. of England, 203.
 Église des Invalides, 274 (pl. 48).
 Egypt under Greek and Roman
 rule, 40.
 Persian rule, 40.
 Egyptians, the, 35-42.
 Eiffel, G., 324.
 Eigel, abbot, 110.
 Embankment, Thames, 319.
 Emirs of Kairwan, 128.

- End of the World, the, 131.
 "Envy of the World," 137.
 Entablature, Doric, 64, 65 (pl. 7).
 Era, Augustan, 81.
 Maximilianic, 297.
 Erchenbald, bishop, 149.
 Erechtheion, the, 69 (pls. 6, 8).
 Ethiopians, the, 39.
 Etruscans, the, 57.
 Euphemius, bishop, 144.
 Eurysaces, tomb of, 77.
 Everaclus, bishop, 149.
 Exchange, Bahia, 340.
 Berlin, 294.
 Commerce, Cincinnati, 385.
 Copenhagen, 270.
 Cotton, Galveston, 385.
 Gurzenich, Cologne, 225.
 Liverpool, 306.
 monumental, Mayence, 224.
 Produce, N. Y., 384.
 Royal, London, 306.
 Seville, 251.
 Vienna, 299.
 Exchanges, American, 384.
 Exhibition-buildings, American, 385.
 Centennial, 385.
 Exposition, Vienna, 300.
 -buildings, Paris, 298 (pl. 50).
 FABBICHE NUOVE, Vienna, 247.
 Vecchi, Venice, 243.
 Falerii, gate at, 57 (pl. 5).
 Fall of Rome, 101.
 Faneuil Hall, Boston, 367.
 "Federlhof," Vienna, 258.
 Feldherrenhalle, Munich, 291.
 Ferdinand I., 261.
 Firduz, 107.
 Fireplace, the, 388.
 Fireplaces, French, 227.
 Fiamboyant, 204 n.
 Fleischbrücke, 267.
 Fondaco de' Tedeschi, 243.
 dei Turchi, 330.
 Fontana Medina, Naples, 274.
 Form in architecture, analogies, 31.
 an expression of the age, 20.
 standards of, 21.
 -system, German, 214.
 Forms, architectural, analysis, 20.
 French, improvement, 193.
 Saracenic, 126.
 development, 13th Century, 185 (pl. 29).
 Renaissance, earliest, Germany, 258.
 FORMS, ARCHITECTURAL, theory of, 23-34.
 art and nature, parallelisms, 23, 29 n.
 beautiful in, 24.
 characteristics, 24.
 constructive, laws, 25, 27.
 order, 25.
 symmetry, 26.
 fundamental principles, 23.
 construction, 28, 29.
 geometrical, 27.
 materials, 27, 28.
 durability of, 28.
 Forms, Architectural:
 details, structural, 29-34.
 color, 32.
 form, analogies of, 31.
 forms, decorative, 32.
 language of, 30.
 ornamentation, 31.
 proportion, laws, 31.
 Fortification wall, 90 (pl. 9)
 Fortifications, American aboriginal, 331.
 French, city, 226 (pl. 37).
 German, 223.
 Nuremberg, 264.
 Fortress, Peruvian, ancient, 334.
 Forum, at Pompeii, 77.
 Goldsmiths', 59.
 of Caesar, 80.
 of Trajan, 85.
 Roman, date of, 59.
 original use, 59.
 Romanum, 80.
 Foundry, Vischer's, 260, 262.
 Fountain, Jew's, Mayence, 260.
 of Nuremberg, 224.
 of Sultan Achmet, 142 (pl. 22).
 of the Lions, 136 (pls. 19, 20).
 at Basle, 225.
 at Prague, 303 (pl. 52).
 at Ulm, 225.
 Fountains, Venetian, 235 (pl. 39).
 Francis I., 251-255, 299.
 Frederick I., 184, 267.
 II., 263, 283.
 Friederichsbau, 267 (pl. 46).
 Frieze, Doric, 64.
 Ionic, 65.
 Frigidarium, 89.
 Fund, Peabody, 321.
 GALASSI TOMB, 58.
 Galerie d'Apollon, Paris, 255.
 Galla Placidia, empress, 102.
 mortuary chapel, 102.
 Gallery of Henry IV., 256.
 National, London, 317.
 of Painting, 306.
 "Garden of the Architect," 136.
 Gardens, Horticultural Society's, London, 315.
 Gares (stations), French, 321.
 Gate, Brandenburg, 284, 287 (pl. 49).
 Canopic, Rome, 73.
 Ettlinger, Karlsruhe, 288.
 Florian, 225 (pl. 36).
 Franz-Joseph's, 295.
 lodge, North Easton, 370.
 Neustadt, 225 (pl. 36).
 of Dantzic, 266.
 of Victory, 293.
 of the Lions, 52 (pl. 4).
 of the Sun, 134.
 of Giovanni, Padua, 245.
 St. Louis, Quebec, 364.
 Paul's, Basle, 225 (pl. 36).
 Uenglinger, 225 (pl. 36).
 at Falerii, 57 (pl. 5).
 at Labnah, 333 (pl. 45).
 at Palmyra, 90 (pls. 11, 12).
 at Verona, 89.
 (See *Porta*.)
 Gates, city, Etruscan, 57.
 Pelasgian, 53 (pl. 4).
 Roman, 85.
 Gateway, Hadrian's, Athens, 87.
 at Mylassa, 88.
 at Nicæa, 87.
 Gateways, Mexican, ancient, 333.
 Pelasgian, 52.
 Roman, 77.
 Geison (cornice), 64.
 Generalife, the, 136.
 Genseric (Vandal), 101.
 George I., statue, 305.
 Gero, archbishop, 153.
 Gewandhaus, 226 (pl. 46).
 Ghaznavids, the, 132.
 Giralda, the, 134.
 Glyptothek, Munich, 289 (pl. 49).
 Godehard, bishop, 153.
 "Golden Age," ancient, 148.
 Golden chariot, 74.
 "Golden House" of Nero, 84.
 Gonzaga, Federigo, 245.
 Gregory of Tours, 108.
 Grimthorpe, lord, 313.
 Grotto, Dhummar Lena, 119 (pl. 17).
 of Karli, 118.
 -temples, 119.
 Grottos, derivation, 118.
 Indian, 117-119.
 Guard-house, royal, Berlin, 289.
 Guttae, 64.
 Gymnasium, Vienna, 304.
 at Alexandria, 73.
 at Athens, 75.
 HADAMAR, ABBOT, 148.
 Hadrian, mausoleum, 88 (pl. 11).
 Hakem II., 127.
 Halikarnassos, mausoleum, 71.
 Hall, the, 388.
 Hall, Agricultural, Phila., 385.
 Albert, London, 348.
 Blickling, 269.
 Don Pedro's, 135.
 Faneuil, Boston, 367.
 Goldsmiths', 306.
 Hardwicke, 269.
 Horticultural, 385.
 Independence, 345, 367 (pl. 60).
 Machinery, 385.
 Memorial, 372, 385.
 Harvard College, 375.
 of Archives, Roman, 79.
 of Assembly, Albany, 366.
 of Justice, Granada, 136.
 Stuttgart, 263.
 of Liberty, Kehlheim, 289.
 of Prayer, 126.
 of Records, San Francisco, 369.
 of Xerxes, propylea, 49 (pl. 3).
 of the Abencerrages, 136 (pl. 19).
 Ambassadors, 135.
 Blessing, 135.
 Generals, Munich, 291.
 Two Sisters, 136.
 Royal Albert, London, 315.
 Sever, Harvard College, 370, 375.

- Hall, St. George's, Liverpool, 306.
 Stone, Wellesley College, 375.
 Vestry, Kensington, 317.
 Westminster, 203 (pl. 30).
 Wladislaw, Prague, 258.
 Hallenkirche, 230.
 Halles Centrales, Paris, 323.
 Halls, town-, German, 223.
 (See *Town-hall, Rathhaus*.)
 Hanging-Gardens, 42, 46, 47.
 Hebdomon (palace), 112.
 Heinrich, prince, 283.
 Heinrichshof, Vienna, 299.
 Helena, empress, 97.
 Helinus, archbishop, 161.
 Henry I. of Germany, 147.
 II., 158.
 III., 154, 156.
 IV., 157.
 Hephestion, tomb, 74.
 Hephaistos, 56.
 Heraclius, emperor, 107.
 Heribert, bishop, 159.
 Hermes, 256.
 Heroic Age, 94.
 Heschem, 127.
 Hezilo, bishop, 153.
 Hippodromes, 74.
 Hirschvogelhaus, 261.
 Hisr-Sargon, palace, 45.
 Hofburg, Vienna, 264, 276 (pl. 47).
 Hofstadt (theorist), 293.
 Holy Grail, temple, 206, 217.
 places, Mohammedan, 125.
 Sepulchre, church, 98 (pl. 13).
 Hospital, Batley Cottage, 319.
 founding, Florence, 238.
 Toledo, 250.
 Greenwich, 273.
 Hahnemann, 374.
 Heriot, 270.
 insane, Poughkeepsie, 374.
 Jefferson, Philadelphia, 374.
 Military, Hanover, 295.
 New York City, 374.
 Roosevelt, New York, 374.
 St. Peter's, London, 319.
 Thomas', London, 319.
 Sta. Maria Nuove, 248.
 Stuyvenburg, 329.
 Women and Children's, 374.
 at Ancona, 279.
 at Beaune, 226.
 at Erzeroum, 133.
 at Naples, 278.
 Hospitals, American, 374.
 French, 191.
 Hôtel, Bourgherould, 227.
 d'Anjou, Angers, 253.
 de la Tremouille, 227 (pl. 37).
 de Ville, Brussels, 225.
 Ghent, 225.
 Havre, 323.
 Louvain, 225 (pl. 35).
 Lyons, 274.
 Marseilles, 323.
 Paris, 254 (pl. 45).
 new, 324.
 old, 324.
 Nancy, 279.
 St. Quentin, 226, 227.
 Hôtel Ecoville, 254 (pl. 44).
 St. Paul, Paris, 197.
 Hotel, Central, Glasgow, 321.
 Charing Cross, 321.
 Grand, Vienna, 300.
 Langham, London, 321.
 Métropole, 321.
 Hotels, city, American:
 Astor House, New York, 397.
 Bellevue, Philadelphia, 397.
 Brunswick, 397.
 Continental, 397.
 Dam, New York, 397.
 Fifth Avenue, N. Y., 397.
 Grand, San Francisco, 398.
 Pacific, Chicago, 397.
 Palace, San Francisco, 397.
 Palmer House, Chicago, 397.
 Plaza, New York, 397.
 St. Charles, N. O., 397.
 Vendome, Boston, 397.
 West End, Philadelphia, 397.
 Hotels, country, American:
 Del Monte, Monterey, 399.
 Grand Union, Saratoga, 399.
 Kaaterskill, New York, 399.
 Montezuma, N. M., 399.
 Raymond, Pasadena, 399.
 United States, Saratoga, 399.
 at Cresson, Pa., 399.
 Hotels, seaside, American:
 Brighton, Coney Island, 399.
 Manhattan Beach, 399.
 Nanta-ket, 399.
 West End, Bar Harbor, 399.
 Hotels, suburban, American:
 Devon Inn, Philadelphia, 399.
 Ponce de Leon, St. Augustine, 398 (pl. 69).
 Alcazar, 398 (pl. 69).
 Wissahickon, Phila., 399.
 Hotels, English, 321.
 watering-place, 321.
 House, Abbot's, St. Amand, 227.
 American, modern, 388.
 fireplace, 388.
 hall, 388.
 plan, 387.
 Ayrault, 345.
 Bridgewater, London, 307.
 Burleigh, 269.
 "Captain Kidd's," 342.
 Coddington, 342.
 Colonial, 342, 343, 387 (pl. 68).
 Coleman, 387 (pl. 68).
 Cradock, 342.
 Fairfax, 345.
 Geltenzunft, 266.
 Gibbs, 345.
 Hazard, 345.
 Henry Bull's, 342.
 Hertenstein, 260.
 Holland, 269.
 "Ingelborg," 390 (pl. 67).
 Knight's, 266 (pl. 46).
 Longleat, 269.
 Malbone, 345.
 Mansion, London, 320.
 Monmouth Beach, 390 (pl. 68).
 of Artists, Vienna, 300.
 of Jacques Coeur, 227 (pl. 37).
 House, of Liebnitz, 268.
 of the Teutonic Order, 264.
 Oppenheim, 298.
 Rybisch, 263.
 Scott, 390.
 Schlüsselfeld, 224 (pl. 35).
 Somerset, 277, 306.
 stone, Frankfurt, 225 (pl. 35).
 Kuttentberg, 225.
 tenement, Astral, 396.
 Tiffany, 392.
 Topler, 266.
 Vanderbilt, C., 392.
 W. H., 392.
 W. K., 392 (pl. 66).
 Vernon, 345.
 Walton, 343.
 Wanstead, 277.
 White, Washington, 346.
 Wilton, 272.
 Wollaton, 269.
 at Old Colmar, 262.
 "House of Agnes Sorel," 255.
 of Francis I., 254 (pl. 44).
 of Pilate, 164.
 of the Golden Tree, 261.
 Zur Krone, 261.
 House-planning, American, 387.
 Houses, apartment-, U. S., 394.
 English, 321.
 dwelling-, American, 386.
 city, 390.
 colonial, 345, 387.
 country, 389.
 English, 322.
 French, 191, 226, 227, 326.
 German, 134, 223, 225 (pls. 26, 34).
 Mexican, 340.
 Roman, 83 (pl. 10).
 seaside, French, 326.
 South American, 341.
 suburban, French, 326.
 Syrian, 100.
 tenement-, American, 396.
 at Nancy, 279.
 Houses, Parliament, Buda-Pesth, 330.
 Ottawa, 364 (pl. 59).
 Vienna, 299.
 Westminster, 302, 308, 312, 314, 319 (pl. 52).
 Huitzilopochtli (god), 333.
 teocalli of, 336.
 Huitzompan, the, 333.
 Humanism of the Renaissance, 271.
 Hyder Ali, mausoleum, 142.
 Hyksos, the, 42, 57.
 Hypæthral temple, 64 (pl. 7).
 IBRAHIM ADIL SHAH, mausoleum, 142.
 Idealism, German, 214.
 Imitation, decadence, in America, 347.
 "Imperial City," 83, 89.
 Impluvium, 83.
 Incas, the, 332.
 buildings of, 334.
 palaces of, 334.
 Innocent VI., 197.

- Institute, Art, Chicago, 372.
 of Technology, Boston, 376.
 of Technical Education, 317.
 St. Servatius, 150.
 Institution, Smithsonian, 371.
 St. Mary's Collegiate, 153.
 Patrick's, Soest, 149.
 Institutions, charitable, English, 319.
 educational, American, 375.
 Insurance Co. of N. America, 379.
 Ionians, the, 61.
 Ionic order, 65.
 temples, 65.
 Ipsamboul, temples, 39 (pl. 1).
 Isenrich, 110.
 Iron fronts, 377.
 Israelites, the, 41, 44.
 Ivan III., grand-duke, 144.
- JACOB-AL-MANSÚR, 137.
 "Jacob's tomb," 80.
 Jackson, Andrew, statue, 344.
 Jails, American, 375.
 Jains, the, 120.
 Jámá-Masjid, 140 (pl. 21).
 Jaroslav, grand-duke, 143.
 Jennas-al-Arif, 136.
 Jesuits, influence on church-architecture, 273.
 Jonas, metropolitan, 144.
 Judenbrunnen, Mayence, 260.
 "Judges' tomb," 80.
 Julian Course, 80.
 Julianus Argentarius, 104.
 Juliobona, 109.
 Justinian, emperor, 104, 111.
- KAABA, THE, 124, 125.
 Kailasa, the, 119 (pl. 17).
 Kaiserieh (gate), 139.
 Karl, duke, 278.
 Karlshoferkirche, Prague, 219.
 Karlsthor, Munich, 293.
 Karnak, great temple, 28.
 Kerameikos, hall in, 75.
 Khorsabad, palace, 44.
 Khosrau-Antiochia, 107.
 Khosrau I., 107.
 II., 107.
 Khumbo-Rana, 120.
 Klitias and Ergotimos, vase, 63 (pl. 6).
 Königsbau, Munich, 293.
 Stuttgart, 299.
 Korœ-bos, 70.
 Kouyúnjik, palace, 45.
 Kremlin, Moscow, 144, 145.
 Kunsthalle, Carlsruhe, 296.
 Kutab-Minár, 137 (pl. 21).
- LABORATORY, VIENNA, 299.
 Labyrinth, 40 n.
 "Lagoon City," 113.
 Landhaus, Gratz, 261.
 "Lantern of Demosthenes," 72 (pl. 8).
 Law Courts, new, London, 314.
 327, 329, 330, 348.
 Lectern, Cathedral, Hildesheim, 264.
 Sta. Maria in Capitolò, 260.
- Leinwandhaus, Breslau, 260.
 L'Enfant, 303.
 Leo, bishop, 212.
 I., pope, 102.
 IX., 159.
 Leopold I., 279.
 Leszczynski, duke, 279.
 Lewis of Bavaria, 217, 224.
 Libraries, American, 369.
 Library, Billings, 369.
 Converse, 370.
 Crane, 370.
 della Minerva, Rome, 275.
 imperial, Vienna, 276.
 Lenox, New York, 370.
 National, Mexico, 339.
 Philadelphia, 370.
 Public, Boston, 370.
 -school, Dayton, 370.
 Radcliffe, Oxford, 277.
 Redwood, Newport, 345.
 Ridgway, Philadelphia, 370.
 royal, Berlin, 283.
 St. Mark's, Venice, 246, 276 (pl. 42).
 Temple, London, 319.
 Woburn, Mass., 369 (pl. 63).
 Munich, 291.
 North Easton, Mass., 370.
 Lighthouse, La Rochelle, 226.
 Lodges, cemetery, 362.
 Loggia dei Lanzi, 235, 291.
 dei Mercanti, 235.
 dei Osii, 234.
 degli Officiali, 235.
 del Delegato, 249.
 del Papa, 242.
 Lothaire, emperor, 163.
 Louis XII., 227, 251, 253.
 XIV., 271, 274-276, 280 n, 281.
 statue, 287.
 XV., 280, 281.
 XVI., 281.
 Louis Quinze, 306.
 Louvre, Paris, 255, 256, 275, 298, 323 (pls. 45, 50).
 new, 348.
 Lucius III., pope, 132.
 Ludwig I., 289-293, 298.
 Ludwigskirche, Munich, 290 (pl. 50).
 Luithold, bishop, 150.
 Lusthaus, Stuttgart, 266.
 Luther, 262.
 Lysikrates, monument, 72, 81 (pl. 8).
- MACEDONIANS, THE, 72, 75.
 Magyars, the, 147, 149.
 Mâhâbhârata, epic, 115.
 Mahavança, the, 117.
 Mairies, Paris, 324.
 "Maison Carrée," 88.
 Mamertine prison, 57.
 Manco Capac, 332.
 Manège (stables), imperial, 278.
 Mansions, Albert Hall, 321.
 "Queen Anne," 322.
 Manu, book of laws, 115.
 Manuel, king, mausoleum, 229.
 Marburg, Munich, 266.
 Marcus Aurelius, works, 88.
 Maria de' Medici, 271.
- Market, Farringdon St., 317.
 fish-, Billingsgate, 317.
 Leadenhall St., 317.
 meat-, central, 317.
 Markets, Mexican, 339.
 Marktkirche, Halle, 220.
 Masjid-i-Shah (mosque), 139.
 Mathilde, Otho's daughter, 150.
 Maurice de Sully, 177.
 Mausoleum, Hyder Ali, 142.
 Ibraheim Adil Shah, 142.
 King Manuel, 229.
 Mohammed Shah, 142.
 Mumtâzá Mahal, 140.
 Shah Jâhân, 142.
 (See *Tombs*.)
 Mausoleums, 71, 88.
 Mausolus, tomb, 71.
 Maximilian, emperor, 257.
 II., king, 297.
 Medici, Cosimo de', 238, 240.
 Giulio de', 245.
 Maria de', 271.
 tombs of, 246.
 Medresseh (college), 139.
 Meinwerk, bishop, 152, 153.
 Memorial, Albert, 315.
 Wallace, 315.
 Mena, Menes, king, 35.
 Menelaos, palace, 56.
 Mercados, Mexico, 339.
 Mercantile halls, German, 223.
 Mercato de' Grani, 232.
 Nuovo, 247.
 Metagenes, 70.
 Metal-work, Etruscan, 60.
 Metopes, 64.
 Midas, rock-tomb, 55.
 Mineria, Mexico, 339.
 Minster, Beverly, 200, 313.
 of the Epiphany, 153.
 at Aix-la-Chapelle, 109 (pl. 15).
 at Berne, 219.
 at Biburg, 162.
 at Bonn, 161, 182.
 at Freiburg, 209 (pl. 32).
 at Strasburg, 213.
 at Ueberlingen, 219.
 at Ulm, 219, 222 (pls. 31, 33).
 at Zurich, 161.
 Mints, United States, 365.
 Minyas, treasury of, 55.
 Mission Dolores, 344.
 Moguls, the, 138.
 Mohammed, 124.
 III., 135.
 V., 135.
 Khodabenda, tomb, 132.
 Monastery, Abdinghof, 153.
 Gernrode, 149.
 grotto, 117.
 Ilsenburg, 53.
 Memleben, 150.
 of St. John the Baptist, 148.
 Maurice, 148.
 Pantaleon, 149.
 on the Kalkberg, 149.
 at Gandersheim, 150.
 at Hillersleben, 148.
 at Magdeburg, 148.
 at Quedlinburg, 148.
 Mongolians, the, 43.

- Mongols, the, 132, 133.
 conquest of Russia, 144.
 Montespan, Madame de, 274.
 Monument. Bartholdi, 400.
 Bunker Hill, 399.
 Farragut, 400.
 Frederick the Wise, 261.
 of Allrecht, Brandenburg, 260.
 on the Kreuzberg, 292.
 Tucher, Ratisbon, 260.
 Washington, 399.
 Monuments at Breslau, 258.
 architectural, oldest, 35.
 choragic, Greek, 71.
 memorial, American, 400.
 sepulchral, Egyptian, 36.
 Roman, 77, 78.
 Thebes, 37.
 Moors, the, 137.
 Mosque, Agia Sofia, 142.
 Eagle, Damascus, 125.
 El-Aksa, 125.
 El-Azhar, 128.
 El-Daher, 128.
 El-Hakim, 130.
 El-Moyed, 131 (pl. 19).
 "Flower," Cairo, 128.
 Great, Broussa, 133.
 New Delhi, 140 (pl. 21).
 Green, Nicæa, 133.
 Jamâ, Bijapur, 142.
 New Delhi, 140 (pl. 21).
 Kaaba, the, 124, 125.
 Kait-Bey, 131.
 Masjid-i-Shah, 139.
 Moti, Agra, 140.
 of Ahmedabad, 138.
 of Amru, 125.
 of Ibn-Touloun, 128,
 of Mohammed, 126.
 of Okba, 128.
 of Omar, 125.
 of Saladin, 130.
 of Sultan Achmet, 142.
 Bajazet, 142 (pl. 22).
 Barkuk, 130.
 Hassan, 130.
 Suleiman, 142 (pl. 22).
 Validé, 142.
 of the Abbāsids, 127.
 Olive, 125.
 Palm, 125.
 Pearl, 140.
 royal, Ispahan, 139.
 Santa Sophia, 142.
 "The Splendid," 128.
 at Cæsarea, 133.
 at Chekirgeh, 133.
 at Cordova, 127, 134 (pls. 20, 21).
 at Gour, 138.
 at Mandu, 138. •
 at Morocco, 137.
 at Old Delhi, 137, 138.
 at Palermo, 128, 129.
 at Seville, 134.
 at Tabriz, 133.
 Mosques, Mohammedan, 142.
 Hindu-Mohammedan, 138.
 Syrian, 133.
 of Ispahan, 130.
 Mott-Masjid, Agra, 140.
 Mound-builders, 331.
 Mounds, grave-, 54, 55.
 Mstislav, prince, 143.
 Muley Hassan, 135.
 Mumtāzā Mahal, Mausoleum, 140.
 Mural decoration, 94, 284.
 Museo Civico, Vicenza, 249.
 Museum, Army Medical, 371.
 art, Cincinnati, 371 (pl. 63).
 new, Amsterdam, 329.
 Berlin, 294.
 old, Berlin, 289.
 British, London, 288, 306.
 Dresden, 298 (pl. 51).
 Leipzig, 299.
 Memorial Hall, 372.
 National, Mexico, 339.
 Washington, 371.
 Natural History, London, 318.
 New York, 373.
 of Arms, Vienna, 295 (pl. 52).
 of Art, Metropolitan, N. Y., 373.
 and Industries, Royal, 299.
 of Fine Arts, Boston, 370, 372.
 St. Louis, 372.
 of Practical Geology, 307.
 Peabody, 375.
 Smithsonian, 371.
 South Kensington, 315, 316.
 University, Oxford, 314.
 at Gotha, 300.
 at Hanover, 295.
 at Pesth, 288.
 at Weimar, 300.
 Museums, American, 371.
 imperial, Vienna, 300.
 Mussulmans, the, 142.
 Mutual Life Ins. Co. building,
 Philadelphia, 380.
 Mutuli, 64.
 Mydan-i-Shah (square), 138.
 NABOPOLASSAR, 46.
 Namatius, bishop, 108.
 Napoleon I., 287.
 III., 287, 289.
 Nassauerhaus, 225 (pl. 35).
 Nature and Art, parallelism, 23,
 29 n.
 Naumachia, 80.
 Nebuchadnezzar, 46.
 Nectanebes, 40.
 Neue Bau, Stuttgart, 267.
 Nicetius, archbishop, 108.
 Nile, inundation, 36.
 Nimrud, palaces, 45.
 Nineveh, 42.
 ancient, site, 45.
 destruction, 46.
 extent of, 44.
 Ninus, king, 42.
 Norman invasion of Sicily, 129.
 Notker, bishop, 150.
 Nunnery, Mittelmünster, 150.
 Nuraghi (towers), 57.
 OBELISK, CENTRAL PARK, 39 n.
 at London, 39 n.
 at Munich, 293.
 at Paris, 39.
 at Rome, 39.
 Odeion, Athens, 68, 74, 87.
 Odoacer, king, 101.
 Odysseus, palace, 56.
 Office, War., London, 319.
 Office-blocks, American, 379.
 Offices, municipal, Nottingham,
 317.
 Okba, 128.
 "Old Fort," 342.
 Olmeks, the, 331.
 Olympus, Indian, 116.
 Omar, 124.
 Opéra Comique, Vienna, 300.
 Opera-house, Berlin, 283, 325.
 Duluth, 370.
 Holyoke, 370.
 Metropolitan, N. Y., 371.
 Paris, new, 325, 326, 348, 371.
 San Francisco, 370.
 St. Petersburg, 325.
 Vienna, 299, 325.
 Opere Francigeno, 210.
 Opisthodomos, 64.
 Oratorio, S. Bernardino, 240.
 Order, Corinthian, 72.
 first appearance, 70.
 Doric, 64.
 Ionic, 65.
 Roman, 78 (pl. 10).
 Tuscan, 78 (pl. 10).
 Ornamentation, 31.
 architectural, 184, 185 (pl. 26).
 English Gothic, 198.
 Osmanli, the, 133.
 Ospedale Maggiore, 235, 240.
 Sta. Maria Nuova, 248.
 Ostrogoths, the, 104, 111.
 Otho, bishop, 157.
 II., 150.
 III., 153.
 the Great, 148-150, 162.
 daughter, 150.
 wife of, 143, 148.
 works of, 148.
 Otto Heinrichsbau, 264, 267 (pl.
 46).
 Oxylos, tomb, 62.
 PAGODA, CHALEMBARAM, 120.
 Khomadu, 121.
 Madura, 120 (pl. 18).
 Shoemadu, 121.
 Pagodas, Burmese, 121.
 Chinese, 122.
 Indian, 120.
 Painting, Egyptian, 38.
 Renaissance, 258.
 Palace, Akbar's, 140.
 Alcazar, the 134 (pl. 20).
 Alhambra, 135, 137 (pls. 20, 21).
 archbishop's, Alcalá de Hena-
 res, 250.
 Bologna, 249.
 Milan, 249.
 Pisa, 242.
 Barbarossa, 184.
 bishop's, Sens, 255.
 Blenheim, 277.
 Chihil-Sutân, 139.
 Coburg, 295.
 de los Monjas, 333 (pl. 54).
 Diocletian's, 91, 103, 167.
 Doria, 247.

- Palace, ducal, Angers, 253.
episcopal, Diakovar, 295.
Liège, 150.
Mittelmünster, 150.
Nancy, 279.
Epstein, 299.
Farnese, 250.
Favara, 131.
Flavian, 85.
Generalife, 136.
government, Lima, 340.
grand-ducal, Brunswick, 289.
Nancy, 279.
Schwerin, 303.
Hampton Court, 309.
imperial, Goslar, 184.
Vienna, 276 (pl. 47).
Karl Ludwig's, 299.
king's, Tenochtitlan, 333.
Kinsky, 277.
Kuba, 131, 132.
Landgrave, 184.
Lateran, 271.
Lichtenstein, 277.
Louvre, 197, 298 (pl. 50).
Luxembourg, 271.
marble, Potsdam, 283.
Masimo, 244.
Minerium, 131.
national, Mexico, 339.
Nero's, 84.
new, Potsdam, 283.
Stuttgart, 281.
of Alkinoos, 56.
of Az Zahra, 129.
of Charlemagne, 110.
of Charles V., 250.
of Cyrus, 48.
of Ecbatana, 48.
of Henry I., 147.
of Khosrau II., 107.
of Malvezzi-Campeggi, 247.
of Menelaos, 56.
of Nicolas the Great, 164.
of Odysseus, 56.
of Prince Eugene, 277 (pl. 47).
Philibert, 273.
of Sargon, 44.
of the doges, 235 (pl. 39).
of the duke of Lorraine, 227.
of the Marquesa de las Naves, 250.
of the podestà, Bologna, 243.
Florence, 235.
Orvieto, 234.
of the prince-bishop, Würzburg, 277.
of the Teutonic Order, 224 (pl. 35).
of the Trocadero, 326.
of the Tuileries, 289 (pl. 50).
papal, Avignon, 197.
Peruzzi's, 244 (pl. 43).
prince's, Wismar, 264.
royal, Amsterdam, 272.
Berlin, 277.
Cracow, 224.
Ispahan, 139.
Madrid, 278.
Munich, 267.
Naples, 271, 279.
Paris, 191.
- Palace, Russian, first, 144.
Scaliger, 276.
Schwarzenberg, 263, 277.
Sina, 299.
Theodoric's, 103.
Waldstein, 272.
Westminster, 330, 348.
Zisa, 131.
at Alexandria, 73.
at Aranjuez, 251.
at Bagdad, 127.
at Gubbio, 243.
at Landshut, 262.
at Madura, 141 (pl. 21).
at Mitla, 333 (pl. 54).
at Palenque, 332.
at Pesaro, 243.
at Teheran, 139.
at Urbino, 243.
at Uxmal, 333 (pl. 54).
at Versailles, 276.
at Whitehall, 272.
at Wimpfen, 184.
(See *Palazzo, Château*.)
- Palace-construction, Assyrian, 45.
German, 26.
Persian, 49.
- Palaces, Babylonian, 47.
French, 191, 197.
Italian, 234, 242 (pl. 39).
Mohammedan, 142.
royal, Assyrian, 44 (pl. 3).
Byzantine, 112.
Pelagian, 55.
Persepolis, 49.
Russian, 144.
Saracenic, 127, 131.
Venetian, 235.
at Nimrud, 45.
- Palacio Nacional, Mexico, 339.
- Palæologi, the, 144.
- Palais de Justice, Antwerp, 329.
Beaugency, 254 (pl. 44).
Brussels, 325, 326, 367 (pl. 53).
Dijon, 252.
Orleans, 254 (pl. 45).
Rouen, 227 (pl. 57).
Royal, Paris, 227.
- Palas, the, 205.
- Palazzo, Balbi, 271.
Barbarano, 249.
Barberini, 271.
Bartolini-Salimbeni, 244.
Bevilacqua, 242, 243, 256.
Bolognetti, 247, 275.
Borghese, 271, 276 (pls. 41, 42).
Buoncompagni, 246.
Buonsignori, 234, 243 (pl. 39).
Buturlino, 247.
Ca d'Oro, 235.
Carignano, 273.
Casamurata, 242.
Cerchi, 242.
Chierigati, 249.
Ciaga, 242.
Comunale, Brescia, 243.
Piacenza, 234 (pl. 39).
Pistoja, 234.
Perugia, 234.
Corner della Cà Grande, 246.
Corsini, 278.
de' Camerlinghi, 244.
- Palazzo, de' Diamanti, 243.
de' Leoni, 243.
dei Giureconsulti, 234.
del Consiglio, 243.
del Magnifico, 242.
del Monte, Citorio, 275.
Montepulciano, 245.
del Municipio, 271.
del Tè, 245.
della Cancellaria, 244 (pl. 43).
Consulta, 278.
Prefettura, 247.
Ragione, 234.
Ducale, Genoa, 247.
Urbino, 240.
Venice, 235, 241 (pls. 39, 42).
Fantuzzi, 247.
Farnese, 246 (pl. 43).
Fava, 242.
Foscari, 235.
Giovannelli, 235 (pl. 39).
Giraud, 244.
Giustiniani, 245.
Godofredi, 271.
Gondi, 241.
Gravina, 243.
Grimani, 275.
Guadagni, 241.
Gualanti, 242.
Guinigi, 234.
-Carigiani, 242.
Lanzelotti, 274.
Larderel, 247.
Lercari, 247.
Levi, 246.
Magnani, Bologna, 249.
Florence, 242.
Marchetti, 271.
Marescoti, 271.
Mattei, 271.
Nerucci, 240.
Nicolini, 271.
Nicolina, 247.
of Filippo Durazzi, 271.
Pandolfini, 245.
Piccolomini, 240.
Pisani, 235.
Pitti, 239, 247, 272.
Pizzardi, 244.
Prefettizio, 249.
Pubblico, Cremona, 234.
Pienza, 246.
Siena, 234.
Quaratesi, 239.
Reale, Genoa, 271.
Venice, 249.
Riccardi, 240, 247.
Rondinelli, 243.
Roselli del Turco, 246.
Roverella, 243.
Ruccellai, 240.
Sauli, 247 (pl. 41).
Schifanoja, 243.
Schio, 243.
Sciarrà, 271.
Scontri, 242.
Scroffa, 241.
Serristori, 246.
Spannuchi, 240.
Spinola, 247.
Strozzi, 240, 241 (pl. 41).
Tarugi, 245.

- Palazzo, Tiene, 243, 248.
 Tursi Doria, 271.
 Uguccioni, 245.
 Valmarano, 249.
 Vecchio, 234 (pl. 39).
 Vendramin-Calergi, 241 (pl. 42).
 Vidoni, 245.
 (See *Palaces, Castles*.)
 Pan, grotto of, 73.
 Panathenaic stadium, 87.
 Pandrosos, nymph, sanctuary, 69.
 Pantheon, the, 81, 112, 206 (pl. 9).
 new, 68 (pls. 6, 7).
 "Paradise" (court), 148.
 Parthenon, old, 67.
 "Paris of America," 393.
 Parvez. See *Khosrau II*.
 "Parzival," the, 192.
 Pasargadae, palaces, 48.
 Patent-Office, Washington, 363.
 Patio de la Berkah, 135 (pl. 21).
 de los Leones, 135 (pl. 20).
 Patios (courts), 341.
 Paulinus, bishop, 102.
 Pelasgi, the, 51.
 Pellerhaus, 208 (pl. 47).
 Penitentiaries, American, 375.
 Penn Square, Philada., 367, 374.
 Pension Bureau, Washington, 364.
 Perikles, 68, 74, 81.
 Peripteral temples, 64 (pl. 6).
 "Perpendicular," 204.
 Perpetuus, bishop, 108.
 Persepolis, rock tombs, 48 (pl. 3).
 royal palaces, 49.
 Persians, the, 48-52.
 Perun (Russian god), 143.
 Peter the Great, 145.
 Pharaohs, the, 41.
 Phigalia, gate, 53 (pl. 4).
 Philip Augustus, 192.
 Philipp, Karl, 278.
 Philippe, Louis, 287.
 Phoenicians, the, 43.
 monumental remains, 44.
 Piastenschloss, 264.
 Piazza Monte Cavallo, 271.
 Pigeon-house, Creteil, 227.
 Neule, 227.
 Pillar, Pompey's, 91.
 Pinakothek, Munich, 201 (pl. 51).
 old, 203, 208 (pl. 51).
 Place de la Concorde, Paris, 283.
 du Carrousel, 287.
 Portland, 306.
 Plan, Assyrian dwellings, 44.
 Egyptian temples, 38.
 Pelasgian palaces, 55, 56.
 Plotina, empress, 88.
 Poggio Gallette, tomb, 58.
 Potou, counts of, 226.
 Polychnomy, 93, 94.
 Polytechnic, Stuttgart, 299.
 Zürich, 299.
 Pons Fabricius, 80 (pl. 9).
 Milvus, 77.
 Palatinus, 77.
 Ponte de' quattro capi, 80 (pl. 9).
 Molle, 77.
 Rotto, 77.
 Pons von Stablo, 156.
 Poplyogynus, Constantine, 113.
 Porsenna, king, tomb, 58.
 Porta Aurea, 85, 91.
 Capuana, 241.
 d'Arroux, 89 (pl. 10).
 de' Borsari, 89.
 del Po, 273.
 Nigra, 85, 156 (pl. 9).
 Pia, 249.
 Savonarola, 245.
 Triumphalis, 92.
 Portales, Mexico, 340.
 Portals, Assyrian palace, 45.
 Etruscan, 57.
 Persian, 50.
 Posticum, 63.
 Post-office, Frankfort, 365.
 Lexington, 365.
 London, 306, 316, 317.
 Marquette, 365.
 New York, 365.
 Philadelphia, 365.
 Quincy, 365.
 Rochester, 365.
 Stuttgart, 299.
 and court-house, Atlanta, 366.
 Augusta, 365.
 Post-offices, United States, 365.
 "Prætorium," Lambessa, 88.
 Pribislav, prince, 162, 163.
 Prie-thood, Egyptian, 36.
 Priory, St. Michael's, 314.
 Priscus, Tarquinius, 59.
 Probus, Conrad, bishop, 210.
 Procopius (author), 105.
 Procuratie Nuove, Venice, 249.
 old, Venice, 241.
 Pronaos, 63.
 Propylea, Athens, 68, 69 (pl. 6).
 Eleusis, 71, 77.
 London, 306.
 Munich 289 (pl. 51).
 Propylon, temple, Egyptian, 38.
 Psammet, king, 40.
 Psammetichi, dynasty, 40.
 Psammetichus, 40.
 Pseudo-dipteral temples, 64.
 Ptolemies, the, 40.
 Puerta de Serranos, 229.
 del Cuarte, 220.
 Pyramid of Cheops, 36 (pl. 1).
 skull, Mexican, 333.
 Pyramids, the, 35-37.
 QUETZALCOATL, 332.
 "Queue" style, 280, 295.
 Quirinal, Rome, 271.
 RACES, AMERICAN ABORIGINAL,
 331.
 Asiatic, 42-51.
 Pelasgian, 51.
 Railway-station, Balt. and Ohio,
 Philadelphia, 384.
 Boston and Albany, 384.
 and Providence, 384.
 Chicago and North-western, 384.
 Northern, Vienna, 300.
 Penna., Chicago, 384.
 Philadelphia, 328, 383.
 Southern, Vienna, 300.
 State, Vienna, 300.
 Stuttgart, 299.
 Railway-stations, American, 383.
 English, 321.
 French, 323.
 Rámáyana, epic, 115.
 Rameses II., 38, 39.
 Ramparts, Peruvian, ancient, 334.
 Ranzell, Fray Alonzo, 336.
 Rathaus of Basle, 225.
 of Breslau, 225 (pl. 35).
 of Bruges, 224.
 of Brunswick, 224.
 of Cologne, 225, 265, 303 (pl. 46).
 of Emden, 266.
 of Hanover, new, 295.
 of Münster, 224 (pl. 35).
 of Nuremberg, 224.
 of Oudenarde, 225 (pl. 35).
 of Prague, 224.
 of Ratisbon, 224.
 of Tangermünde, 225 (pl. 34).
 of Ueberlingen, 225.
 of Ulm, 225.
 at Munich, 304.
 at Posen, 264.
 at Schweinfurt, 265, 266 (pl. 46).
 at Vienna, 340, 314, 329 (pl. 52).
 (See *Town-halls*.)
 Rath of Mahavellipore, 119.
 Refectory, St. Martin des Champs,
 Paris, 191.
 Reformation, the, 262, 263.
 Regulini, tomb, 58.
 Religion of the Incas, 332.
 Remains, ancient Indian, 115.
 Palenque, 332.
 Remigius, bishop, 201 n.
 Residence, episcopal, Freising,
 260.
 Mayence, 260.
 Rialto, Venice, 267.
 Rile, diagonal, 175.
 Richard II., 203.
 Ricimer (Visigoth), 101.
 Riding-school, winter, Vienna,
 276.
 Rikdag of Meissen, 149.
 Roads, ancient Peruvian, 334.
 Rochefort, Peter de, bishop, 196.
 Rock-temples, Indian, 117-119.
 Nubia, 30 (pl. 1).
 Rock-tomb of Midas, 55.
 Rock-tombs, Beni-Hassan, 37.
 Cervetri, 58 (pl. 5).
 Etruscan, 58.
 Jerusalem, 80.
 Lykian, 57.
 Persepolis, 48 (pl. 3).
 Petra, 92.
 Rock-writing, or Dighton, 331.
 Rococo style, 279.
 Roger, king, 131.
 "Roman tower," Cologne, 109.
 Romulus, Augustulus, 101.
 Roof, Egyptian temple, 38.
 gambrel, 342.
 mansard, 273.
 Rudolf II., 201.
 Ruhmeshalle, Ratisbon, 289 (pl. 50).
 Ruins, ancient Peruvian, 332.
 of Mita, 332.

- Ruprechtsbau, Heidelberg, 263.
 Rybisch, Heinrich, house, 263.
 tomb of, 261.
- SAALBAU, MUNICH, 293, 298.
 Sakya Muni, 116.
 Sala de los Ambajadores, 135.
 Saladin, sultan, 125, 130.
 Salle, the, 205.
 Charlemagne, Paris, 197.
 des Pas Perdus, 327, 328.
 Séances, 330.
 Samos, gate of, 53 (pl. 4).
 Sanctuary, Artemis Brauronia, 63.
 Limnatis, 63.
 of Zeus, 53.
 Poseidon Hippios, 62.
 Sans-Souci, Potsdam, 283.
 Sarcophagus, Napoleon I., 275.
 Sargon, king, 45.
 palace, 44.
 Satyros, 71.
 Schloss Montsalvatch, 192, 224.
 Schöne Brunnen, 224.
 School, Protestant, Vienna, 299.
 Rugby, 312.
 Schools, Board, Cross Hill, 318.
 London, 319.
 Walton Lane, 318.
 examination, Oxford, 317.
 public, American, 376.
 Schools of Architecture:
 Bernini, 274.
 Brunelleschi, 239.
 Carlsruhe, 291.
 Florentine, 240.
 Gothic, Cologne, 215, 302.
 Hanoverian, 295.
 Italian, 229, 230.
 Munich, 290.
 Schinkel, 293.
 Vienna, 295.
 Sculpture, architectonic, 106.
 Egyptian, 38, 39.
 Greek, 70, 71 (pl. 7).
 temple, 67.
 Renaissance, 258.
 Scuola di S. Marco, 241 (pl. 42).
 di San Rocco, 243.
 Secundines, tomb, 89 (pl. 10).
 Seleucids, the, 106.
 Seljuks, the, 133.
 Seminary, Diakovar, 295.
 Semiramis, queen, 42, 46.
 Sennacherib, king, 45.
 Septa Julia, 80.
 Sepulchres, Pelasgian, 54.
 Seraskierat Tower, 142 (pl. 22).
 Sergii, arch of the, 89.
 "Serpent-wall," 333.
 Sessoriana, the, 97.
 "Sessorium," 97.
 Seti I., king, 38.
 "Seven," sacred number, 46.
 Sforza, Francesco, palace, 240.
 Shah Abbas the Great, 138, 139.
 Akbar the Great, 140.
 Hussain, college, 139.
 Jahán, mausoleum, 140.
 Shalmanezzer V., 45.
 Shlrín, empress, 107.
 Shishak, king, 39.
- Shrine, S. Jago de Compostella, 171.
 Sibyl, temple, Tivoli, 81.
 Sigismund I., king, 258.
 Singakademie, Berlin, 289.
 "Skull pyramid," 333.
 Slavs, the, 147.
 Society, Horticultural, Vienna, 300.
 musical, 299 (pl. 52).
 "Solitude," Stuttgart, 278.
 Soma, Alexandria, 73.
 Spas, English, 307.
 Sphinx, the, 37.
 Spiesshof, Basel, 267.
 Spring-house, Kutenburg, 225.
 Tusculum, 57.
 Square, great, Ispahan, 138.
 Stanislaus, Nancy, 279.
 St. Bernward, bishop, 152.
 Conrad, bishop, 149.
 Gero, 148.
 Helena, empress, 100.
 Louis, emperor, 193, 195, 197.
 Sta. Costanza, tomb, 101.
 Stadhuis, Amsterdam, 272, 278.
 Stadia, Greek, 74.
 Stairs, Spanish, Rome, 278.
 State-house, Boston, 345, 346.
 Newport, 345.
 Springfield, Ill., 369.
 Station, railway-, Broad St., Philadelphia, 323, 383.
 Canon St., London, 321.
 Ruby, 321.
 St. Lazare, 323.
 Pancras, London, 321, 323.
 Strasburg, 323.
 York, 321.
 Statthaltere, Vienna, 295.
 Statuary, bronze, 56.
 Stone-construction, Greek, 63.
 Stones, balancing-, 331.
 Stores, American, 377.
 English, 320.
 Street-improvements, London, 319.
 "Street of tombs, 77 (pl. 9).
 Structures, circular, antique, 205, 206.
 commercial, U. S., 376.
 ecclesiastical, American, 344.
 Stuart, "Athenian," 306.
 Stupas, the, 116.
 Sturm, Bernhard Christoph., 278.
 Style, Berlin, 294.
 classic, revival, U. S., 350.
 "Decorated," 308.
 Elizabethan, 272.
 English, 308.
 "Flamboyant," 309.
 "Free classic," 355.
 Gothic in America, 353.
 carpenter's, 353.
 German, 308.
 "Victorian," 309.
 in America, 353.
 "Louis Quatorze," 280 n.
 Moorish, modern, 304.
 National, American, 349.
 "old Christian," 296.
 "Palladia," 307.
 "Queen Anne," 311.
 in America, 353, 354, 386.
- Style, "Queue," 280, 295.
 Renaissance, in America, 352.
 Rococo, 279.
 Romanesque, in America, 356.
 "Tudor," 308.
 Vernacular, American, 351.
 Styles, architectural, 22.
 Sudatoria, 89.
 Suites, residential, English, 321.
 Superga, the, Turin, 278.
 Susa, city, 48.
 Synagogue, Emmanuel, New York, 363 (pl. 57).
 San Francisco, 363.
 Rodef Shalom, Philada., 363.
 at Berlin, 304.
 at Dresden, 295.
 at Nuremberg, 304.
 at Pesth, 304.
 at Stuttgart, 304.
 at Vienna, 304.
- TABERNACLE, MORMON, 362.
 Tabularium, 79.
 Taghlaks, the, 137.
 Taj Mahal, the, Agra, 140.
 Tantalos, grave of, 54.
 Teatro Olimpico, 249.
 Tee (emblem), 116.
 Temple, ancient Mexican, 333.
 Boro-Budor, 121 (pl. 18).
 Capitoline, 90.
 Great, the, 90.
 Karnak, 38, 39.
 grotto, Indian, 117-119.
 Indra, 119 (pl. 17).
 Jain, Sadree, 120.
 Masonic, Philadelphia, 373.
 Mormon, 363.
 Newsam, 269.
 of Æsculapius, 88, 91.
 of Antoninus and Faustina, 88.
 of Aphrodite, 71.
 of Apollo, Bassæ, 70 (pls. 6, 8).
 Delphi, 52, 54, 66.
 Miletos, 70 (pl. 8).
 Thearios, 63.
 of Artemis, Ephesos, 66.
 Magnesia, 71.
 Ortygia, 67.
 of Askelepios, 70.
 of Athena, Ægina, 67 (pl. 7).
 Ortygia, 67.
 Priene, 71 (pl. 8).
 Sandifer, 69.
 Tegea, 70.
 of Augustus, 82.
 and Roma, 81.
 of Baal, 46, 91.
 of Bel, 42, 46, 48.
 of Belus, 42, 46.
 of Cæsar, 39 n.
 of Ceres, Liber, and Libera, 59.
 of Concord, 93.
 of Demeter, Eleusis, 64, 77 (pl. 8).
 Pæstum, 71 (pl. 7).
 of Diana, Ephesos, 66.
 Nîmes, 88.
 of Dionysos, 71.
 of Edfu, 40 (pl. 2).
 of Fame, Paris, 287 (pl. 49).

- Temple of Fortuna Virilis, 81.
 of Hera, Mt. Ocho, 54.
 Olympus, 62, 63.
 Samos, 66.
 of Hercules, Pompeii, 77.
 of Herod, 81.
 of Jehovah, 39.
 of Juggernaut, 120.
 of Juno, 77.
 of Jupiter, 61 (pl. 11).
 Capitolinus, 59, 78, 81.
 Stator, 77, 81 (pl. 10).
 Tonans, 89.
 Uitor, 82 (pl. 10).
 of Mars Ultor, 81.
 of Minerva Medica, 104.
 of Nemesis, 69 (pl. 6).
 of Nike Apteros, 68.
 of Poseidon, Alexandria, 73.
 Prestum, 68 (pls. 6, 7).
 of Salus, 60.
 of Solomon, 44, 50, 125.
 of Themis, 67.
 of Theseus, 68 (pl. 6).
 of Venus Genetrix, 80.
 Hadrian's, 98.
 Jerusalem, 87.
 and Roma, 87.
 Victoria, 79.
 of Vesta, Rome, 86.
 Tivoli, 81 (pl. 11).
 of Viracocha, Peru, 334.
 of Virtus et Honor, 60, 91.
 of Viswakarma, 119 (pl. 17).
 of Zeus, Athens, 67, 76 (pl. 9).
 Olympia, 70 (pl. 6).
 Olympian, 67 (pl. 7).
 Selinus, 67.
 of the Dioscuri, 81.
 Holy Grail, 206, 217.
 Jews, 363.
 Pythian Apollo, 88.
 Sun, 90 (pl. 10).
 Baalbec, 91 (pl. 11).
 Palmyra, 90 (pls. 11, 12).
 Rome, 90 (pl. 9).
 at Alabanda, 88.
 at Assisi, 81.
 at Assos, 63.
 at Ephesos, 88.
 at Knidos, 88.
 at Luxor, 39.
 at Mount Abu, 121.
 at Nîmes, 88.
 at Thorikos, 69.
 Temple-architecture, Roman, 76.
 -construction, Greek, 63.
 Etruscan, 59.
 -structures, circular, 81.
 Temple, circular, Baalbec, 91
 (pl. 12).
 Doric, 64.
 Grecian, origin, 65.
 Greek, 61.
 Temples, ædes in antis, 64 (pl. 6).
 cella of, 63.
 Chinese, 122.
 Corinthian, 73.
 dipteral, 64.
 Egyptian, plan, 38 (pls. 1, 2).
 Etruscan, Roman, 59 (pl. 5).
 Greek, 63, 67 (pls. 6, 7).
 Temples, grecian, 119.
 hypæthral, 64 (pl. 7).
 Ionic, 65.
 Mexican, ancient, 333.
 Pelægian, 53, 54.
 peripteral, 64 (pl. 6).
 Peruvian, ancient, 334.
 Phœnician, 43.
 pseudo-dipteral, 64.
 rock-, 39 (pl. 11).
 at Metapontum, 62, 68.
 at Olympia, old, 62.
 at Petra, 62.
 at Selinus, 67.
 at Syracuse, 67.
 Tenement-houses, American, 395.
 Teocalli of Huastlopochtli, 336.
 of Laimah, 333 (pl. 54).
 of Papantia, 333 (pl. 54).
 of Tehuantepec, 333 (pl. 54).
 of Tenochtitlan, 333.
 of Tlaxpan, 333 (pl. 54).
 of Uxmal, 333 (pl. 54).
 of Xochicalco, 333 (pl. 54).
 Tetzel, 262.
 Teutons, the, 146, 147, 167.
 Thales of Miletus, 100.
 Theatre, Booth's, N. Y., 370.
 "Casino," N. Y., 371 (pl. 62).
 Château, Paris, 325.
 court-, Carlsruhe, 297 (pl. 52).
 Dresden, 298 (pl. 50).
 Covent Garden, 288, 371.
 du Château d'Eau, 325.
 Eden, Paris, 326.
 Königstädtische, 289.
 La Gaîté, 325.
 Scala, 371.
 National, Prague, 300.
 of Berlin, 289 (pl. 49).
 of Dionysos, 74, 75.
 of Leipzig, 294 (pl. 51).
 of Marcellus, 83.
 of Megalopolis, 70, 74.
 of Messene, 70.
 of Milan, 278.
 of Monte Carlo, 325.
 of Parma, 278.
 of Patara, Lykia, 88.
 of Prague, 278.
 of Vienna, 278.
 royal, Munich, 282.
 stone, first, 79.
 at Alexandria, 73.
 at Aspendos, 89.
 at Baireuth, 282.
 at Corinth, 87.
 at Epidaurus, 70.
 at Laodicea, 88.
 at Munich, 293.
 at Nancy, 279.
 at Orange, 92.
 at Rome, 278.
 at Verona, 278.
 Theatres, American, 370.
 French, 325.
 German, 282.
 Grecian, 74.
 Roman, 79, 88.
 revolving, 80.
 at Petra, 92.
 Thebes, monuments of, 37.
 Theinkirche, Prague, 219.
 Themistokles, 68.
 Theodoric the Great, 103, 109.
 Theodosius, 101.
 Theophania, wife of Orho, 143.
 Theophilus, emperor, 112, 127.
 Thietmar, bishop, 153.
 Thermæ of Diocletian, 103.
 Roman, Sq. 81. (See *Baths*.)
 Thrasyllus, monument, 72 (pl. 8).
 Timber-construction, 203 (pl. 30).
 Assyrian, 46.
 Greek, 62.
 Persian, 49.
 Timour (Tamerlane), 137.
 Tiryns, city-walls, 52.
 Toltees, the, 331.
 Tomb, Cucumella, 58.
 "Jacob's," 80.
 "Judges," 80.
 of Abbas II., 139.
 of Absalom, 80.
 of Akbar, 140.
 of Alvares, 55.
 of Augustus, 83.
 of Belus, 47.
 of Bishop Lorenz, 260.
 of C. Publicius, 78.
 of Cecilia Metella, 78.
 of Cyrus, 48 (pl. 3).
 of Darius, 48 (pl. 3).
 of Edo Wiemken, 265.
 of Elizabeth, 268.
 of Eurysaces, 77.
 of Helena, 80.
 of Henry VII., 268.
 of Hephæstion, 74.
 of Louis XII., 253 (pl. 45).
 of Margaret, 268.
 of Mausolus, 71.
 of Mohammed, 132.
 of Oxylos, 62.
 of St. Helena, 100.
 Margaret, 262.
 Seibald, 258.
 of Sta. Costanza, 101.
 of Stanislaus Sauer, 261.
 of Zacharia, 80.
 of the Horatii and Curiatii, 58
 (pl. 5).
 Medici, 246.
 Secundines, 89 (pl. 10).
 Poggio Gajelle, 58.
 Porsenna, king, 58.
 rock-, of Midas, 55.
 Rylisch, 261.
 Vendramin, 241 (pl. 40).
 at Mylassa, 88.
 Tombs, Etruscan, 58.
 Lydian, 54.
 of Regulini and Galassi, 58.
 of the kings, 73, 80.
 rock-, Beni-Hassan, 37.
 Cervetri, 58 (pl. 5).
 Etruscan, 58.
 Lykian, 57.
 Persepolis, 48 (pl. 3).
 Petra, 92.
 Roman, 80.
 Roman, 77.
 Scaligers, 234 (pl. 38).
 Syrian, 99.

- Tope, great, Anuradhapoora, 117.
Sanchi, 117 (pl. 17).
at Madras, 117.
Topes, the, 116, 117.
Torre Pignattara, 101.
Tuileries, Paris, 255, 298, 323 (pls. 45, 50).
Tower, Eiffel, Paris, 324.
Kutab-Minar, 137 (pl. 21).
Leaning, Pisa, 166 (pl. 27).
Nesle, Paris, 227 (pl. 37).
of Comares, 135.
of London, 170.
of Yezid, 132.
of the Seraskierat, 142.
Winds, 75 (pls. 6, 8).
porcelain, Nanking, 123.
Roman, Cologne, 109.
School's, London, 269 *n*.
Towers, ancient Mexican, 333.
bell-, Italian, 166.
in Persia, 132.
Town-hall of Aldstadt, 265.
of Birmingham, 307.
of Breslau, 261.
of Freiburg, 260.
of Gölitz, 261.
of Gotha, 266.
of Gubbio, 235.
of Heilbronn, 261.
of Leipsic, 264.
of Leitmeritz, 262.
of Lima, 340.
of Liverpool, 306.
of Lübeck, 265.
of Mühlhausen, 264.
of Nuremberg, 272.
of Rothenburg, 266.
of Vicenza, 247.
at Bremen, 268 (pl. 46).
at Halifax, 317.
at Leamington, 317.
at Leicester, 317.
at Manchester, 317.
at Middleboro', 317.
at Sheffield, 317.
at Wakefield, 317.
(See *Rathhaus*.)
Town-halls, English, 317.
German, 223, 224.
Towns, fortified, German, 147.
Tracery, commencement of, 189.
Trade, Board of, London, 307.
Trajan, Arch of, 93.
"Treasures," 55 (pl. 4).
Treasury, London, 307.
National, Washington, 363.
of Atrous, 55 (pl. 4).
of Minyas, 55.
Whitehall, 277.
"Tree of life," 48 (pl. 3).
Tribes, Mauritanic, 128.
Triglyphs, 64.
Trinkhalle, 297 (pl. 52).
"Tripod Street," 72.
"Tullianum," Rome, 57.
Tunnel-vaults, Assyrian, 45.
Tuscan order, 98 (pl. 10).
Tympanum, 64.
- UDO, BISHOP, 156.
Uffizi, the, 247.
Ulrich, duke, 261.
University, Allahabad, 322.
Freiburg, 264.
of Berlin, 283.
of Cracow, 225 (pl. 34).
of Pennsylvania, 375.
of Toronto, 376.
Vienna, new, 300.
at Helmstädt, 266.
at Kiel, 294.
at Oxford, 269.
at Rostock, 294.
Unwan, archbishop, 153.
Urban V., pope, 197.
- VALIDE, SULTANA, mosque, 142.
Vatican Garden, 88.
Vaulting, cross or groined, 157.
fan-, 204 (pl. 30).
French, 168.
groined, 174.
pointed, 174.
Spanish, 170.
Vedas, the, 115.
Vendôme column, 287 (pl. 49).
Verulam, 313.
Viaduct, Holborn, 320.
Victor II., pope, 159.
Vihara (monastery), 117.
Viharas, Ajuntah, 118.
Villa, Aldobrandini, 271.
Belvedere, Prague, 261.
Borghese, Rome, 271.
crown-prince, Berg, 299.
Farnesina, Rome, 244.
Hadrian's, 86.
Italian, 249 (pl. 43).
Ludovisi, Rome, 274.
Madama, Rome, 245.
Medici, Rome, 247, 249, 271.
of Pope Julius III., 247.
Pamfili, Rome, 274.
Pia, Vatican, Rome, 247.
Rosa, Dresden, 298.
Tucher, Nuremberg, 261.
Visconti, Frascati, 275.
at Chiswick, 272.
Vimala Sah, 121.
Vimanas (temples), 120.
Visigoths, 101.
Vladimir the Great, 143, 144.
conversion and baptism, 143.
wife of, 143.
Volute, Persian, origin, 50, 66.
Vsevolod Jurjevich, 144.
- WALHALLA, THE, 289 (pl. 49).
Walid, caliph, 124-126.
Wall, city, Nineveh, 44.
decoration, Assyrian, 45.
Babylonian, 47.
Egyptian, 38.
Pelagian, 56.
Persian, 50.
Phoenician, 43.
Roman, 84.
Great Chinese, 122.
- Wall-painting, Greek, 68.
Indian grotto, 119.
Wallace memorial, London, 315.
Walls, city, Babylonian, 42, 46, 47.
Etruscan, 57.
Mykenæ, 52 (pl. 4).
Tiryns, 52.
"cyclopean," 52.
Egyptian, 38.
fortification, Greek, 68.
Pelagian, 53 (pl. 4).
Persian, 50.
Peruvian, ancient, 334.
Serpent, Mexico, 333.
Warehouse of the Turks, 330.
Warehouses, American, 377.
Water-bladder (symbol), 116.
Water-works, American, 384.
Wehrinhar, abbot, 148.
Welfenschloss, Hanover, 295.
Wiesenkirche, Soest, 216.
Wigwer, bishop, 153.
Wikfried, archbishop, 149.
William I., 131.
II., 131.
IV., Frederick, 293, 294.
of Aquitaine, 168.
the Conqueror, 169.
Willigis, archbishop, 150, 155.
Windows, mullioned, 309.
Winged bulls, 44, 50 (pl. 3).
Wingless Victory, temple, 68.
Winihard, 110.
Winter-garden, Carlsruhe, 297.
Wolfgang, bishop, 150.
Wolfram von Eschenbach, 206.
Wood-construction, Doric, 65.
Wolsey, Thomas, 309.
Works, defensive, German, 222.
Hadrian's, 86.
of Acoka, 116.
of Antoninus Pius, 88.
of Aurelian, 90.
of Basil, 112.
of Charlemagne, 109.
of Constantine, 92.
of Diocletian, 91.
of Eginhard, 110.
of Justinian, 104, 111.
of Marcus Aurelius, 88.
of Theodoric, 103.
of Titus, 84.
of Trajan, 85.
of Vespasian, 84.
Roman, in Germany, 85.
Worship, Christian, first places, 97.
Nature-, Pelasgi, 53.
- XENOKLES, 70.
Xerxes, 48.
hall of, 49, 50 (pl. 3).
- YUSUF ABU JACOB, 134.
- ZECCA, VENICE, 246.
Zeus Herkeios, altar, 56.
Zwinger, Dresden, 277, 280, 294, 298 (pl. 47).

- Temple of Fortuna Virilis, 81.
 of Hera, Mt. Ocho, 54.
 Olympia, 62, 63.
 Samos, 66.
 of Hercules, Pompeii, 77.
 of Herod, 81.
 of Jehovah, 39.
 of Juggernaut, 120.
 of Juno, 77.
 of Jupiter, 91 (pl. 11).
 Capitolinus, 59, 78, 81.
 Stator, 77, 81 (pl. 10).
 Tonans, 89.
 Uitor, 82 (pl. 10).
 of Mars Ultor, 81.
 of Minerva Medica, 104.
 of Nemesis, 69 (pl. 6).
 of Nike Apteros, 68.
 of Poseidon, Alexandria, 73.
 Pestum, 68 (pls. 6, 7).
 of Salus, 60.
 of Solomon, 44, 50, 125.
 of Themis, 67.
 of Theseus, 68 (pl. 6).
 of Venus Genitrix, 80.
 Hadrian's, 98.
 Jerusalem, 87.
 and Roma, 87.
 Victrix, 79.
 of Vesta, Rome, 86.
 Tivoli, 81 (pl. 11).
 of Viracocha, Peru, 334.
 of Virtus et Honos, 60, 91.
 of Viswakarma, 119 (pl. 17).
 of Zeus, Athens, 67, 76 (pl. 9).
 Olympia, 70 (pl. 6).
 Olympian, 67 (pl. 7).
 Selinus, 67.
 of the Dioscuri, 81.
 Holy Grail, 206, 217.
 Jews, 363.
 Pythian Apollo, 88.
 Sun, 90 (pl. 10).
 Baalbec, 91 (pl. 11).
 Palmyra, 90 (pls. 11, 12).
 Rome, 90 (pl. 9).
 at Alabanda, 88.
 at Assisi, 81.
 at Assos, 63.
 at Ephesos, 88.
 at Knidos, 88.
 at Luxor, 39.
 at Mount Abu, 121.
 at Nîmes, 88.
 at Thorikos, 69.
 Temple-architecture, Roman, 76.
 -construction, Greek, 63.
 Etruscan, 50.
 -structures, circular, 81.
 Temple, circular, Baalbec, 91
 (pl. 12).
 Doric, 64.
 Grecian, origin, 65.
 Greek, 61.
 Temples, ædes in antis, 64 (pl. 6).
 cella of, 63.
 Chinese, 122.
 Corinthian, 73.
 dipteral, 64.
 Egyptian, plan, 38 (pls. 1, 2).
 Etruscan, Roman, 59 (pl. 5).
 Greek, 63, 67 (pls. 6, 7).
 Temples, grotto, 119.
 hyæthral, 64 (pl. 7).
 Ionic, 65.
 Mexican, ancient, 333.
 Pelagian, 53, 54.
 peripteral, 64 (pl. 6).
 Peruvian, ancient, 334.
 Phœnician, 43.
 pseudo-dipteral, 64.
 rock-, 39 (pl. 1).
 at Metapontum, 62, 68.
 at Olympia, old, 62.
 at Petra, 92.
 at Selinus, 67.
 at Syracuse, 67.
 Tenement-houses, American, 395.
 Teocalli of Huitzilopochtli, 336.
 of Labnah, 333 (pl. 54).
 of Papanla, 333 (pl. 54).
 of Tehuantepec, 333 (pl. 54).
 of Tenochtitlan, 333.
 of Tuspan, 333 (pl. 54).
 of Uxmal, 333 (pl. 54).
 of Xochicalco, 333 (pl. 54).
 Tetzel, 262.
 Teutons, the, 146, 147, 167.
 Thalasis of Nefadi, 100.
 Theatre, Booth's, N. Y., 370.
 "Casino," N. Y., 371 (pl. 62).
 Châtelet, Paris, 325.
 court-, Carlsruhe, 297 (pl. 52).
 Dresden, 298 (pl. 50).
 Covent Garden, 288, 371.
 du Château d'Eau, 325.
 Eden, Paris, 326.
 Königstadische, 289.
 La Gaieté, 325.
 Scala, 371.
 National, Prague, 300.
 of Berlin, 289 (pl. 49).
 of Dionysos, 74, 75.
 of Leipsic, 294 (pl. 51).
 of Marcellus, 83.
 of Megalopolis, 70, 74.
 of Messene, 70.
 of Milan, 278.
 of Monte Carlo, 325.
 of Parma, 278.
 of Patara, Lykia, 88.
 of Prague, 278.
 of Vienna, 278.
 royal, Munich, 282.
 stone, first, 79.
 at Alexandria, 73.
 at Aspendos, 89.
 at Baireuth, 282.
 at Corinth, 87.
 at Epidauros, 70.
 at Laodicea, 88.
 at Munich, 293.
 at Nancy, 279.
 at Orange, 92.
 at Rome, 278.
 at Verona, 278.
 Theatres, American, 370.
 French, 325.
 German, 282.
 Grecian, 74.
 Roman, 79, 88.
 revolving, 80.
 at Petra, 92.
 Thebes, monuments of, 37.
 Theinkirche, Prague, 219.
 Themistokles, 68.
 Theodoric the Great, 103, 109.
 Theodosius, 101.
 Theophrastus, wife of Otho, 143.
 Theophilus, emperor, 112, 127.
 Thietmar, bishop, 153.
 Thermæ of Diocletian, 103.
 Roman, 89, 81. (See *Baths*.)
 Thrasyllus, monument, 72 (pl. 8).
 Timber-construction, 203 (pl. 30).
 Assyrian, 46.
 Greek, 62.
 Persian, 49.
 Timour (Tamerlane), 137.
 Tiryns, city-walls, 52.
 Toltecs, the, 331.
 Tomb, Cucumella, 58.
 "Jacob's," 80.
 "Judges," 80.
 of Abbas II., 139.
 of Alsalam, 80.
 of Akbar, 140.
 of Alyattes, 55.
 of Augustus, 83.
 of Belus, 47.
 of Bishop Lorenz, 260.
 of C. Publicius, 78.
 of Cæcilia Metella, 78.
 of Cyrus, 48 (pl. 3).
 of Darius, 48 (pl. 3).
 of Edo Wiemken, 265.
 of Elizabeth, 268.
 of Eurysaces, 77.
 of Helena, 80.
 of Henry VII., 268.
 of Hephæstion, 74.
 of Louis XII., 253 (pl. 45).
 of Margaret, 268.
 of Mausolus, 71.
 of Mohammed, 132.
 of Oxylos, 62.
 of St. Helena, 100.
 Margaret, 262.
 Sebald, 258.
 of Sta. Costanza, 101.
 of Stanislaus Sauer, 261.
 of Zacharia, 80.
 of the Horatii and Curiatii, 58
 (pl. 5).
 Medici, 246.
 Secundines, 89 (pl. 10).
 Poggio Gajelle, 58.
 Porsenna, king, 58.
 rock-, of Midas, 55.
 Rybisch, 261.
 Vendramin, 241 (pl. 40).
 at Mylassa, 88.
 Tombs, Etruscan, 58.
 Lydian, 54.
 of Regolini and Galassi, 58.
 of the kings, 73, 80.
 rock-, Beni-Hassan, 37.
 Cervetri, 58 (pl. 5).
 Etruscan, 58.
 Lykian, 57.
 Persepolis, 48 (pl. 3).
 Petra, 92.
 Roman, 80.
 Roman, 77.
 Scaligers, 234 (pl. 38).
 Syrian, 99.

- Tope, great, Anuradhapoora, 117.
Sanchi, 117 (pl. 17).
at Madras, 117.
Topes, the, 116, 117.
Torre Pignattara, 101.
Tuileries, Paris, 255, 298, 323 (pls. 45, 50).
Tower, Eiffel, Paris, 324.
Kutab-Minar, 137 (pl. 21).
Leaning, Pisa, 166 (pl. 27).
Nesle, Paris, 227 (pl. 37).
of Comares, 135.
of London, 170.
of Yezid, 132.
of the Seraskierat, 142.
Winds, 75 (pls. 6, 8).
porcelain, Nanking, 123.
Roman, Cologne, 109.
School's, London, 269 n.
Towers, ancient Mexican, 333.
bell-, Italian, 166.
in Persia, 132.
Town-hall of Altstadt, 265.
of Birmingham, 307.
of Breslau, 261.
of Freiburg, 260.
of Görlitz, 261.
of Gotha, 266.
of Gubbio, 235.
of Heilbronn, 261.
of Leipzig, 264.
of Leitmeritz, 262.
of Lima, 340.
of Liverpool, 306.
of Lübeck, 265.
of Mülhausen, 264.
of Nuremberg, 272.
of Rothenburg, 266.
of Vicenza, 247.
at Bremen, 268 (pl. 46).
at Halifax, 317.
at Leamington, 317.
at Leicester, 317.
at Manchester, 317.
at Middleboro', 317.
at Sheffield, 317.
at Wakefield, 317.
(See *Rathhaus*.)
Town-halls, English, 317.
German, 223, 224.
Towns, fortified, German, 147.
Tracery, commencement of, 189.
Trade, Board of, London, 307.
Trajan, Arch of, 93.
"Treasures," 55 (pl. 4).
Treasury, London, 307.
National, Washington, 363.
of Atreus, 55 (pl. 4).
of Minyas, 55.
Whitehall, 277.
"Tree of life," 48 (pl. 3).
Tribes, Mauritanic, 128.
Triglyphs, 64.
Trinkhalle, 297 (pl. 52).
"Tripod Street," 72.
"Tullianum," Rome, 57.
Tunnel-vaults, Assyrian, 45.
Tuscan order, 98 (pl. 10).
Tympanum, 64.
- UDO, BISHOP, 156.
Uffizi, the, 247.
Ulrich, duke, 261.
University, Allahabad, 322.
Freiburg, 264.
of Berlin, 283.
of Cracow, 225 (pl. 34).
of Pennsylvania, 375.
of Toronto, 376.
Vienna, new, 300.
at Helmstädt, 266.
at Kiel, 294.
at Oxford, 269.
at Rostock, 294.
Unwan, archbishop, 153.
Urban V., pope, 197.
- VALIDE, SULTANA, mosque, 142.
Vatican Garden, 88.
Vaulting, cross or groined, 157.
fan-, 204 (pl. 30).
French, 168.
groined, 174.
pointed, 174.
Spanish, 170.
Vedas, the, 115.
Vendôme column, 287 (pl. 49).
Verulam, 313.
Viaduct, Holborn, 320.
Victor II., pope, 159.
Vihara (monastery), 117.
Viharas, Ajuntah, 118.
Villa, Aldobrandini, 271.
Belvedere, Prague, 261.
Borghese, Rome, 271.
crown-prince, Berg, 299.
Farnesina, Rome, 244.
Hadrian's, 86.
Italian, 249 (pl. 43).
Ludovisi, Rome, 274.
Madama, Rome, 245.
Medici, Rome, 247, 249, 271.
of Pope Julius III., 247.
Pamfilii, Rome, 274.
Pia, Vatican, Rome, 247.
Rosa, Dresden, 298.
Tucher, Nuremberg, 261.
Visconti, Frascati, 275.
at Chiswick, 272.
Vimala Sah, 121.
Vimanas (temples), 120.
Visigoths, 101.
Vladimir the Great, 143, 144.
conversion and baptism, 143.
wife of, 143.
Volute, Persian, origin, 50, 66.
Vsevolod Jurjevich, 144.
- WALHALLA, THE, 289 (pl. 49).
Walid, caliph, 124-126.
Wall, city, Nineveh, 44.
decoration, Assyrian, 45.
Babylonian, 47.
Egyptian, 38.
Pelagian, 56.
Persian, 50.
Phœnician, 43.
Roman, 84.
Great Chinese, 122.
- Wall-painting, Greek, 68.
Indian grotto, 119.
Wallace memorial, London, 315.
Walls, city, Babylonian, 42, 46, 47.
Etruscan, 57.
Mykenæ, 52 (pl. 4).
Tiryns, 52.
"cyclopean," 52.
Egyptian, 38.
fortification, Greek, 68.
Pelagian, 53 (pl. 4).
Persian, 50.
Peruvian, ancient, 334.
Serpent, Mexico, 333.
Warehouse of the Turks, 330.
Warehouses, American, 377.
Water-bladder (symbol), 116.
Water-works, American, 384.
Wehrinhar, abbot, 148.
Welfenschloss, Hanover, 295.
Wieskirche, Soest, 216.
Wigwer, bishop, 153.
Wikfried, archbishop, 149.
William I., 131.
II., 131.
IV., Frederick, 293, 294.
of Aquitaine, 168.
the Conqueror, 169.
Willigis, archbishop, 150, 155.
Windows, mullioned, 309.
Winged bulls, 44, 50 (pl. 3).
Wingless Victory, temple, 68.
Winthard, 110.
Winter-garden, Karlsruhe, 297.
Wolfgang, bishop, 150.
Wolfram von Eschenbach, 206.
Wood-construction, Doric, 65.
Wolsey, Thomas, 309.
Works, defensive, German, 222.
Hadrian's, 86.
of Aqoka, 116.
of Antoninus Pius, 88.
of Aurelian, 90.
of Basil, 112.
of Charlemagne, 109.
of Constantine, 92.
of Diocletian, 91.
of Eginhard, 110.
of Justinian, 104, 111.
of Marcus Aurelius, 88.
of Theodoric, 103.
of Titus, 84.
of Trajan, 85.
of Vespasian, 84.
Roman, in Germany, 85.
Worship, Christian, first places, 97.
Nature-, Pelagian, 53.
- XENOKLES, 70.
Xerxes, 48.
hall of, 49, 50 (pl. 3).
- YUSUF ABU JACOB, 134.
- ZECCA, VENICE, 246.
Zeus Herkeios, altar, 56.
Zwinger, Dresden, 277, 280, 294, 298 (pl. 47).

7250 075

